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HARLAND J. WRIGHT, Editor and Publisher

ROBIN FOWLER
Managing Editor
LOUISE M. SERRA
Assistant Managing Editor

MAISON G. deNAVARRE, PH.C., B.S.
Technical Editor
WILLIAM LAMBERT
Business Manager

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Editorial Comment

Basingpoint Systems Decision

The United States Supreme Court has handed down a decision which may have far-reaching effects. It has ruled that two producers of glucose, in using basingpoint systems, were violating the Robinson-Patman Act provision of the Clayton Act.

While it seems that it is still too early to get a proper perspective on just how far-reaching this decision may be, it is important to keep what has happened to one industry in mind as it may apply to another field. Any manufacturer who bases his pricing system on differentials may find suddenly that his system will have to be set up along other lines.

There are many manufacturers who will need to watch for further developments of this decision, including, among others, soap and food. If it does occur that another method of pricing will have to be introduced, it will mean that a new milestone has been passed in business practices in this country.

Perfect Shipping

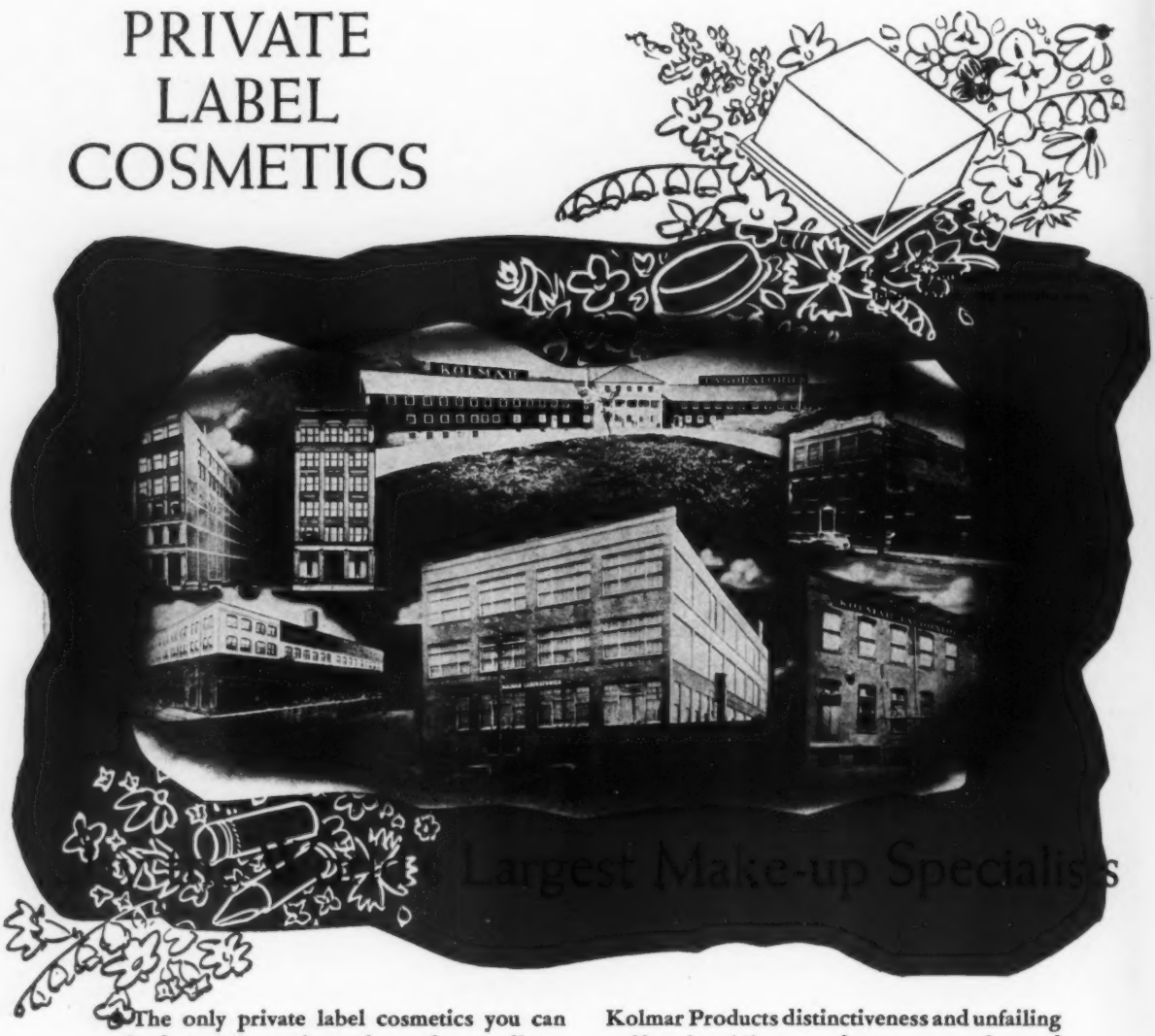
We have just concluded a campaign aimed at impressing upon packers the importance of "perfect shipping." We feel that the subject is of sufficient worth to merit an additional expression on our part.

This is the ninth consecutive year in which this campaign has been carried on, and yet in 1944 the settlement of loss and damage claims amounted to $60,000,000, 36 per cent higher than it was in the preceding year. The need for careful packing is perfectly obvious, as shown in the figures given here.

Production fails of its purpose when there is no end point. There is no benefit in beautifully designed packages, quality products and expensive advertising campaigns, when merchandise created as a result is smashed in transit.

During these war years as never before we should be on guard against waste.

PRIVATE LABEL COSMETICS



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Desiderata

by MAISON G. DeNAVARRE

M. G. DeNavarre at work in his laboratory

HAND lotion continues to be the leading hand cosmetic sold at all toilet goods counters. However, something new is creeping in, namely, the demand for a more oily feel after drying.

HAND LOTION TREND

In fact, the present taste varies all over the lot, showing demand for lotions containing up to 20 per cent of oil over and above all other necessary ingredients. This calls for a complete revision of thinking on hand lotion formulation. Unknowns in the hand lotion business are becoming factors simply as a result of this trend. There is food for thought here.

COMPARATIVE SWEETNESS

Cameron recently reported some interesting experiments in comparing the relative sweetness of glycerine, sucrose (*ordinary sugar*), glucose and lactose. He finds equal sweetness in the following:

2% sucrose and 3.8% glucose
10% sucrose and 14.7% glucose
20% sucrose and 25% glucose
2% sucrose and 6.5% lactose
5% sucrose and 14.9% lactose
8% sucrose and 21.7% lactose
2.5% sucrose and 4% glycerine
5.5% sucrose and 8% glycerine
8.9% sucrose and 12% glycerine

This data should be valuable in flavor work and in the manufacture of tooth paste and powder.

PEROXIDE REPLACEMENT

Makers of cold waving supplies are faced with a shortage of hydrogen peroxide that is so essential to arresting the reducing action of thioglycollates. One will find that a 1 to 2 per cent solution of sodium iodate or bromate will work well in place of peroxide. No reason why the chlorate should work too. An acid rinse wouldn't hurt, although you must watch out for discoloration to cloth or skin due to staining by the iodine liberated, if an iodate is used. It would not be so good to use an acid with bromate or chlorate for both bromine and chlorine are obnoxious in odor and are irritating to skin under certain conditions. If you get iodine stain, it is quickly removed with a little sulfite solution.

GLYCERINE vs. PROPYLENE GLYCOL

To say that either glycerine or propylene glycol replace each other is wrong. Each has its place. In fact, a most ideal humectant would consist of a mixture of propylene glycol, glycerine and commercial sorbitol syrup. Glycerine tends to leave the skin feeling wet with beads of sweat coming out after the cream or lotion has been allowed to dry. This has been its major drawback. Numerous technicians have written about it. Propylene glycol doesn't have this property. It tends to be absorbed quickly and leave a rather dry feeling. Sorbitol syrup gives a characteristically desirable drag with dry after feel. It also gives a certain nice feeling not otherwise obtained but common to the higher sugars. So you see, neither replaces the other. Actually the mixture works best as an *all purpose* humectant. For special uses, each has an advantage undoubtedly. This is not based on my own work alone, but on the opinions of other technicians as well. There are differences in the rate of moisture pick-up and loss under varying conditions of humidity. There are differences in solvent action, viscosity and taste. There are also probably differences in toxicity and possibly a difference in fate, in the human body. That is what makes the game so interesting.

ALMOND MEAL

There once was, and apparently continues to be, a plentiful supply of domestic almond meal that can serve as a base for facial preparations, soap granules, abrasive soaps for facial use and as a vegetable diluent. Word reaches me that several degrees of fineness of almond meal are available as well as a plentiful supply.

FREE USE PATENTS

Quite a few people have written from time to time regarding the status of so-called free use patents assigned to the Secretary of Agriculture. This is especially true due to the several patents recently issued on insect repellents. I am advised by the Office of the Solicitor of the U. S. Department of Agriculture that the following is the method to be used by citizens of the United States for obtaining licenses under such free use patents assigned to the Secretary of Agriculture.

"This Department requires those who wish to use inventions covered by patents under its control to first obtain a license for such use. However, there are no royalties or fees required under the terms of such licenses, and, in fact, if a license is granted, there is no cost to the licensee in any way. However, in accordance with a ruling by the Attorney General (34 Ops. Atty. Gen.

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SHEFFALLOY *Sheffield Process* Tubes, like our victorious Navy have proved their superior toughness and strength. As our battle fleets have overcome dangerous enemies, so have these better SHEFFALLOY TUBES and VINICOTE *Inner Coatings* eliminated dangers to profits and prestige! Tougher *Sheffalloy Metal* treated according to our exclusive *Sheffield Process*, will give your product more protection than it will ever need. And VINICOTE—the series of more than 50 inner coatings developed by our research staff, now prevent corrosion and creep with many products heretofore impossible to pack in this desirable type of container. If you have a problem in which good collapsible tubes are involved, submit it to our staff of capable packaging engineers.

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320), such licenses must contain the provision that they are non-assignable, non-exclusive and revocable. Any broader term of license would require congressional action. Licenses under patents of the Department may be issued upon a letter of application by the licensee."

There are several hundred such patents in existence; I have catalogd them for about 15 years back. Most of the subjects are of no cosmetic importance, but they comprise new compositions of matter, chemical syntheses, mechanical gadgets, insect repellents among others. It may pay you well to check into these as a postwar project.

COLLOIDAL SULFUR

Supplementing the excellent article on colloidal sulfur written by Sr. Macias-Sarria in a recent issue of THE AMERICAN PERFUMER is the news that there is a supplier of a colloidally ground or precipitated sulfur, made into a paste containing about 50 per cent water and 50 per cent colloidal sulfur. The material has the right color and is easy to use. So, if you are a user of colloidal sulfur in a product containing some water, check up on this one.

FOAM BATH PERFUMES

I've run into a series of perfume compounds especially designed to cover the odor of kerosene or petroleum type wetting agents so popular for making bubble or foam baths. The true odor of the perfume stands out after having covered up the odor of the wetting agent. Price is nominal, too.

BENZOIN SUBSTITUTE

And now here is a substitute for gum benzoin, both Siam and Sumatra varieties. The products look pretty well, although I haven't tried to compare them with the real thing. The Siam variety being practically nonexistent, this is worth investigating.

QUESTIONS AND ANSWERS

546. FORMULA FOR CREAM SHAMPOO

Q: *We are interested in a formula for a cream shampoo using some type of wetting agent. It should lather profusely and be a good detergent. We would appreciate a suggested formula and sources of supply.*

G. W. L.—TENNESSEE

A: Most of the available wetting agents do not lather sufficiently well to warrant use. In addition, there is considerable question regarding their effect on the skin, since the products are sold without warranty by the manufacturers. One wetting agent that has been most successful is of the fatty alcohol sulfate type. It had been more or less available, but we are told that due to patent infringements this material is no longer available. Under separate cover we are sending you the names of a couple of wetting agents that you might try to get. These may be diluted with water to any extent you wish, depending upon the cost and efficiency desired. Thus to get a solid cream, you might mix the solid wetting agent with an equal part of colloidal magnesium silicate gel. To get a liquid, the other wetting agent may be diluted with a gum or methyl cellulose mucilage.

547. PRECIPITATED CHALK

Q: *Can you give me any information concerning precipitated chalk? I am interested in the grading and standards established by industry. Also give me any information concerning orris root.*

S. M. D.—CONNECTICUT

A: The Toilet Goods Association has published standards for precipitated chalk. This substance is also recognized in the United States Pharmacopoeia, which is available from THE AMERICAN PERFUMER. Some of these characteristics are described in "Production Control and the Analysis of Cosmetics," appearing serially in THE AMERICAN PERFUMER. All of the above pertains to *pure* precipitated chalk of the Food and Drug grade. The most important characteristics are the bulking density, sedimentation and particle size. Not knowing what you want regarding orris root, we are unable to give you more information than the fact that two grades have been found on the market, the Italian grade and the African grade. Orris is sensitizing to the human skin and is not used much in cosmetics.

548. CREAM DEODORANT FORMULA

Q: *Please send us your best formula for a cream deodorant that has been tested and proved satisfactory.*

L. L.—TEXAS

A: A product that has been found very satisfactory as a deodorant consists of approximately 15 per cent zinc oxide in a petrolatum base. If you want to elaborate on this, you may add one of the better known antiseptics or some trade marked compound.

549. BENZOCAINE CAUSES STAINING

Q: *One of our products contains tannic acid, benzocaine, water and alcohol. We get scattered complaints that the product stains the skin. Please explain to us how this is possible and how it might be avoided. No metal comes in contact with our product. We wonder if there may be something in the customer's skin, such as an excess of iron.*

H. J.—CONNECTICUT

A: Benzocaine and most other *ortho-* and *para*-aminobenzoates cause skin staining to varying degrees, that is much like a rich summer tan. Tannic acid, on the other hand, causes a discoloration of a purplish character, possibly due to the iron content of the skin. The degree of coloration varies with the individual. Tannic acid will stain clothes. Part of the staining action of tannic acid has been overcome by condensing it with glycols, but this type of product is covered by U. S. patent. The staining action of tannic acid is one reason why it is not more widely used in sunburn preparations.

BEAUTY PROGRESS

This charming little enameled Battersea Box was carried by the ladies of the 18th century filled with tiny stars, dots, crescents of black courtplaster . . . "beauty patches" to enhance the whiteness of their skins by contrast.

BY SUCH artifice did the beauties of another day contrive to heighten their allure. The illusion of a healthy, clear skin was induced by contrast with the little black "beauty patch!"

Times have changed. The deathly pallor which was once fashionable has given place to the "healthy glow." But feminine nature is unchanged. The modern woman, like her ancestress, spares no effort to live up to the current beauty standard and modern aids to beauty are precision products of chemical science.

Tomorrow promises great improvements in the art of the cosmetician as wartime developments in many fields become available to our industry. We, at Allied, are ever alert to adapt new ingredients and processes to product improvement when their merits have been demonstrated. Our experiences and findings are available for discussion (in relation to YOUR postwar plans.) Drop in to see us, or, on invitation, we will be happy to call upon you. Appointments may be made at the Allied Office in the R. C. A. Building, Radio City, New York.

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Ancient Techniques in Eye Make-up Still Exist

Without adequate chemical control in the formulation of eye cosmetics they may provoke inflammatory responses to the eyelids and sub-ocular region . . . For this very reason castor oil should be ruled out as an ingredient

by F. V. WELLS, F.C.S.

EYE cosmetics are among the oldest and most interesting of toilet preparations. Before the war, they appealed to an ever-increasing circle of women, and were especially indicated for social functions and evening wear. Without adequate chemical control in their formulation and manufacture they may, however, be apt to provoke inflammatory responses either from the eyes themselves or from the extremely sensitive skin comprising the eyelids and the immediate sub-ocular area. I have dealt rather more fully with the possibility of dermatitis in the concluding section of this article.

HISTORICAL DEVELOPMENT

Historically, the development of eye preparations throughout the ages is by no means devoid of interest, entertainment and instruction. Long before the XIIth Dynasty, the women —and men—of Ancient Egypt were accustomed to smear their eyelids with specially prepared unguents and then to overlay the greasy film with powdered antimony or stibium (called by the Egyptians *mestemt*, and *kuhl* or *kohl* by the Greeks and Arabs). Powdered galena and other astringent substances were also used for this purpose, which was of course essentially a device for reducing the harmful effects of sun glare and the widely varying day and night temperatures. Sir Wallis Budge (in his "Dwellers of the Nile") adds: "The Egyptian women soon discovered that smearing the eyelids with unguent and stibium not only eased the pain in the eyes and rested them, but also added to the natural beauty of their faces. The whiteness of the whites of the eyes was emphasized by the darkened eyelids, and the large dark pupils appeared like black pools in their midst, the whole effect being very striking."

This kohl was afterwards used to darken the eyebrows as well as the lids, but it remained essentially the first eye shadows and not, as Poucher would have us believe, the Egyptian prototype of the modern mascara.[1] The purpose of kohl has nowadays changed, of course, even in the East, so that modern kohls are correctly regarded as being synonymous with eyelash cosmetics. Probably the earliest form of the latter was composed of calcined incense admixed with gums and oleo-resins, followed by pastes and solutions containing Chinese and Indian inks. Modifications of these ancient techniques still survive even to the present day.

Proceeding rapidly through the centuries, I cannot resist quoting a few observations from the inimitable 17th century herbalist, Nicholas Culpepper.[2] Concerning the herb fumitory (*Corydalis lutea*, or fume-wort) he writes: "The juice, dropped into the eyes, cleareth the sight, and taketh away redness and other defects in them, although it procureth some pain and causeth tears. Dioscorides saith it hindereth any fresh springing of hairs on the eyelids (after they are pulled away) if the eyelids be anointed with the juice hereof, with Gum Arabic dissolved therein." He writes also of the herb Eyebright (*Euphrasia officinalis*): "The juice of distilled water of Eyebright, dropped into the eyes, for divers days together, helpeth all infirmities of the eyes," but even better than this, he considers, is the distilled water of Purple Loosestrife (*Lythrum vulgaris*) which "wonderfully cleareth the eyes of dust or anything gotten into them" and which (shades of advertising through the ages!) "hath been sufficiently proved by a man of judgment, who kept it long unto himself as a great secret."

CLARY SAGE AN INGREDIENT

Culpepper, Gerard and other herbalists have referred incidentally, to that very useful perfumery plant, Clary Sage (or "Clear-Eye") as a specific for use in eye lotions. Wild Clary was known, in fact, as *Oculus Christi*, and was valued accordingly.

Eyebright and Golden Seal (*Hydrastis canadiensis*) are still apparently utilized in the eye lotions prepared by the English Society of Herbalists. It is good to note, however, that the bad old practice of mak-

ing the eyes glisten by instilling belladonna into them no longer holds sway, except perhaps in the exotic seclusion of Eastern zenanas.

MODERN MASCARAS

The inherent shortcomings of the old-style eyelash cosmetics soon led to their replacement by more effectively formulated products. The earliest formula in my possession is really nothing more than a primitive ink. The next step was towards improving the consistency and adhesive properties by additions of gum, glycerine or syrup. Even so, these first liquid mascaras did not stay long on the eyelashes. They ran at the slightest tear, or disintegrated into little grains on the lower eyelid.

Cakes of eyelash cosmetic applied with a small moistened brush represented a notable advance and quickly achieved popularity. Cake mascaras appeared usually in two shades, black and brown, but sometimes a third—*châtain* or chestnut—was added. The cake was made of powdered soap and a little water, milled up with about 10 per cent of ivory or lamp black, sienna, umber, burnt umber and similar pigments.

SOAP NO LONGER A BASE

Cake mascara, according to the exact formula used, may be mixed, milled and run into moulds; or mixed, milled, plodded and stamped. Usually the latter process is to be preferred. Generally speaking, soap as a base has been displaced by triethanolamine stearate, glyceryl monostearate or diglycol stearate. The rest of the formula is composed of lamp black, or pigments, together with high-melting point waxes, especially beeswax and carnauba. The latter wax is said to impart lustre to the eyelashes, but too high a percentage will render the mascara brittle. The lanolin tends to make the cake more homogeneous and adherent.

A common enough fault in experimental work is to evolve a mass with an excessive wax content or of the w/o type, with the result that the moist brush encounters a non-wettable surface. This especially happens when the compounder is trying to make his product too water-resistant. Certain color lakes (e.g. as Indian Blue) also tend to render the cosmetic insoluble in water and unwilling to adhere to the brush.

Courtesy, Elizabeth Arden

Eye cosmetics are among the oldest and most interesting of toilet preparations

Ordinary soap is apt to cause smarting of the eyes, and is nowadays replaced by triethanolamine stearate, diglycol stearate, glyceryl monostearate (with a trace of soap added), or one of the popular self-emulsifying waxes. Resins and gums are usually compatible and may give interesting effects.

Many published formulas for cake mascara omit water completely. I have recently found the inclusion of about twenty-five per cent water desirable, this serving to disperse the color pigments in an emulsion rather than a fatty melt. The resulting extruded or plodded strip is partially dried out before stamping. Of course, other formulas involve other methods. In any case, the soap/wax ratio is the important factor, determining as it does the rate of wetting and rapidity of drying.

Coal tar colors are rightly ruled out. Bone black may be considered superior for this purpose to oil black. Purified earth colors are also available.

WATERPROOF PROPERTY ACHIEVED

Other mascara preparations are marketed in the form of aqueous and alcoholic solutions, oil solutions, pastes and creams. Of the solutions, those containing alcohol seem to be preferred—probably owing to their relatively rapid drying when applied to the lashes. It is also possible to achieve a certain "waterproof" property by using a suspension of pigment in gum benzoin tincture or similar alcohol/resin solution. Aqueous solutions based on gums and water-soluble resins are not particularly satisfactory. They tend to glue the lashes together and, when dry, exhibit a dull surface and a tendency to flake off in powder. Excessive brittleness must also be avoided.

GLYCERINE NOT USED EXTENSIVELY

Castor oil, so frequently found in published formulas for mascara and other eye cosmetics, should perhaps be ruled out entirely, owing to the possibility of its provoking irritation in the delicate region of the eyes.[1] The problem here may be one of unsaturation and a related tendency to withdraw water from the skin, in order to saturate the double bond, although it must be admitted that several other oils containing high proportions of unsaturated fatty acids have been similarly used without complaint. Glycerine, in any case, has a well-defined dehydrating action and should not be used extensively in any preparation of this kind. (*Editor's Note:* This article will be continued in an early issue.)

[1] Budge, Sir Wallace. "The Dwellers of the Nile." Also Couallier, C.: *Revue des Marques*, p. 142, 1939.
[2] Culpepper, Nicholas. "The English Physician." 1798.

Can Smell Be Detected Other than by the Nose?

Various chemical and physical tests which are being used to classify odors . . Volatility and solubility occupy a special position in the detection of smell

by R. W. MONCRIEFF

WHAT lines of approach are open to us in considering the problem of the detection of smell, other than by the nose?

We notice first that where instruments are available for the detection of heat, light, sound and touch, they depend on some physical or chemical change that is produced by the phenomena being detected. Heat causes the expansion of mercury and the establishment of a difference of potential across a thermo-couple. Light, visual, ultra-violet, infra-red and X-rays cause chemical changes in the silver halides incorporated in the sensitive emulsion of a photographic plate, and light also causes an electric current to flow in a selenium cell. Sound waves cause a diaphragm to vibrate, touch or pressure differences can be made to alter the level of a liquid, or the shape of the stem of a bent tube in a pressure gauge. We must, therefore, consider what chemical or physical changes can be brought about by odor, that is by the proximity of an odoriferous substance.

MOST ODORANTS ARE UNSATURATED

Considering first the possible chemical changes, there is no chemical change characteristic of odorants. It is true that most odorants are unsaturated and that this unsaturation is capable of detection and measurement and can often be described as the "iodine value," but there are many odorants, such as the paraffins and alkyl alcohols and ethers that are not unsaturated, and again some unsaturated bodies are odorless. It is clear, therefore, that there is nothing more than a general parallelism between odor and unsaturation and so the latter could not be used as an indication of the existence of the former. Then again the presence of electronegative elements in the molecules of a substance confer on it the likelihood of being odorous, but nothing more. In this connection it is interesting to note that those elements occupying the lowest positions

Floral Odors Can Be Measured

in the electrochemical series, viz., the halogens, sulfur, phosphorous, nitrogen and carbon are definitely associated with odor. No other chemical properties suggest themselves as likely to provide a means of detecting odor.

As regards the physical properties of odorants, the position is, I think, a little more hopeful. It is true that a number of physical properties have been examined in connection with odor, and that many of these show no correlation. For example, Zwaardemaker and Hogewind[2] failed to find any relation between magnetism and odor. Refractive index and odor are not closely related although it is surprising how many powerful odorants have refractive indices close to 1.5. Attempts have been made to tie-up odor with infra-red absorption and with ultra-violet absorption.

ODOR AND ABSORPTION

Faraday first, and Tyndall later, observed that odorous substances strongly absorb infra-red radiation, e.g., hydrogen selenide has an intensely objectionable odor and has absorption lines in the infra-red at 4.05 to 4.58μ and 8.0 to 10.3μ, but on the other hand some odorants such as paraffin and carbon bisulphide are transparent throughout the whole range of the infra-red spectrum and have no absorption lines. In an investigation of the subject Grijns[3] failed to correlate smell intensity with the capacity for absorbing radiant heat. In a similar way von Hornbostel[4] has suggested that the degrees of olfactory "brightness" correspond to absorption bands in the ultra-violet range. Heyninx[5] has also attempted to correlate odor with ultra-violet absorption bands but without complete success. Müller[6] has established some parallelism between odor and dipole moment but here again there are difficulties since certain dipole-free compounds such as benzene and hexane are odorous. The relations between odor and diffusibility and between odor and adsorption have been examined. In

many cases there is a parallelism, but it cannot be put higher.

HOW ODOR CAN BE MEASURED

Two properties, viz., volatility and solubility, occupy rather a special position. It seems clear that a substance if it is to possess odor must be volatile so that particles of it can reach the olfactory region and it must be lipoid-soluble so that it can penetrate to the olfactory cells. There is general agreement about these two characteristics being necessary for odor, but something else must be necessary as well. They are not the prime requisites but essential secondary characteristics. If we could define the primary requisite for odor, additional to solubility and volatility, then we might have the means whereby odor could be detected and measured. There are, I think, four physical properties which might bear investigation for this purpose: These are: (1) Change on utra-violet irradiation; (2) Spray electricity; (3) Raman effect; (4) Surface tension changes.

ULTRA-VIOLET IRRADIATION

In 1918, Zwaardemaker and Hogewind[7] showed that when solutions of odorous substances were exposed to ultra-violet radiation they were converted to a colloidal state. Solutions in water or glycerine or paraffin of such odorants as eugenol and safrol, after ultra-violet irradiation, exhibited a Tyndall effect, i.e., they became opalescent in a beam of light. Sunlight and radium emanation produced a similar effect. The following solutions were transformed into suspensoids:

Solutions in water: Eugenol, cresol, guaiacol, geraniol, cumidine and thymol.

Solutions in glycerine: Engenol, safrol, creosote, nitrobenzene, cresol and apiol.

Solutions in paraffin: Aniline, eugenol and cumidine.

The particles in suspension were negatively charged and the change to the suspensoid state was more marked with compounds of high than low molecular weight.

A good deal of other evidence suggests that there is a close connection between odor and ultra-violet irradiation. The investigations of Heyninx and of van Hornbostel have already been mentioned. In addition, the following may be interesting.

Michael[8] showed that when odorous substances were irradiated with ultra-violet light their odor changed, for example aliphatic ketones became "brighter" in smell on irradiation and aromatic ketones as well as most esters became "duller."

Tempelaar[9] observed that odors could be destroyed by ultra-violet irradiation and in fact observed the conditions of time and strength of radiation necessary to accomplish this.

Müller[10] investigated the luminescence or fluorescence of essential oils when exposed to ultra-violet radiation and showed that 239 out of 252 compounds examined exhibited luminescence varying between yellow-green and violet.

It seems clear that there is a close connection between odor and behavior on ultra-violet irradiation, and the development of a colloidal state on irradiation of solutions might be worked up to give an indication of odor. The first factor to settle would probably be the wave length or range of wave lengths of the radiation most suitable to cause this change.

SPRAY ELECTRICITY

The spray formed by extruding water from a fine jet is not electrically charged, but Zwaardemaker and Hogewind[11] showed that if the water contained an odoriferous material in solution, then the spray carried a strong positive charge. They pointed out that this afforded a means of detecting the presence of odorous substances other than by the sense of smell. Solutions of most inorganic salts gave no charge, or else imparted a slight negative charge to the spray. It is important to note that whereas the odorants charged the spray positively, the salts charged it negatively.

It was shown too that the quantity of the electric charge could be measured, and this quantity has been determined independently for various substances by Zwaardemaker, Backman and Huyer. In the case of citral it is 360×10^{-10} coulombs per millilitre of saturated solution of citral in water; in the case of camphor it is 20.3×10^{-10} coulombs and in the case of skatole it is 1.0×10^{-10} coulombs. It was also shown that although when a well-insulated disk was held close to the atomizer it became charged, when the disk was very close to the atomizer it did not develop a charge, and further that there was an optimum distance a maximum charge was developed. When the distance of the plate from the atomizer was plotted against the molecular weight for a series of compounds, then a certain type of curve was obtained.

This type of curve was similar to that obtained by plotting the log smell-strength against the molecular weight. The specific smell-strength is defined as the smallest amount of substance in grams per litre which can be detected by odor. When, for example, the curves were plotted for the fatty carboxylic acids, the "smell-strength" showed a maximum for valeric acid, the C_5 acid, whilst the "optimum distance of the plate" showed a maximum for caproic, the C_6 acid. It seems clear that there is a very close relation between odor and the charge developed by the spray on atomizing a solution of a substance.

In order to find if this relation held rigidly so that odor could be measured by it, it would be necessary to measure the spray charge of a large number of substances both odorous and odorless.

THE RAMAN EFFECT

When monochromatic light, e.g., the green light from a mercury vapor lamp, is scattered by a pure substance, the scattered light is no longer homogeneous, but consists of light of both longer and shorter wave-lengths than the incident light. The difference in wave-length is the Raman shift. The Raman shift (or shifts) is characteristic of any pure compound and is independent of the wave length of the incident light. The shift is thought to be due to a resonance effect, derived from the energy of the molecules of the scattering substance. Evidently the Raman shift is determined by the intramolecular vibrations and it has long been suspected that the molecular vibrations of an odorant are responsible for its action on the olfactory cells which initiate the sensation of odor.

Dyson[12] attempted to correlate the Raman shift with odor. His investigations led him to conclude that only substances possessing Raman shifts

between 1400 and 3500 are odorous. In addition he postulated that to be odorous, a substance must have an appreciable vapor pressure so that particles of it could reach the nasal receptors and must also be lipoid-soluble so that the particles could penetrate to the olfactory cells. Dyson instanced the case of the alkyl mercaptans which have similar odors and showed that the methyl, ethyl, propyl, butyl and amyl mercaptans all have Raman shifts within the range 2567 to 2580. No other compounds examined have this shift and no other compounds have the peculiar mercaptan odor. Dyson considers that we might associate an osmic frequency of 2580 with the mercaptans, just as we associate a wave-length with a particular color of light. Different classes of compounds with more or less characteristic odors had Raman shifts within fairly narrow ranges. Some of those noted were:

Raman Shift	Type of odor
1700	Aldehydes, Ketones
2100	Acetylenes
2500	Mercaptans
3000	Aromatic hydrocarbons
3300	Pyridine, pyrrole

The paraffins which are odorous and the stumbling block of so many theories of odor, have Raman shifts in the region of 2800 and so fall into line. Stereo-isomers which are known sometimes to have different odors, also sometimes have different Raman shifts, e.g.:

cis	2—pentene	1658
trans	2—pentane	1674

(both these isomers have other Raman shifts outside the olfactory range of 1400-3500 but this does not affect the argument.)

Therefore, provided a substance is volatile and has lipoid-solubility, it will be odorous if it has a Raman shift in the region of 1400-3500 and this could be used to detect odorant properties. This is to say that if a hitherto unknown substance was found to have a Raman shift of about 2100, it could be predicted that it would be odorous provided it was also lipoid-soluble and volatile.

GLYCERINE AN EXCEPTION

There may, however, be exceptions. Glycerine has a vapor pressure and some lipoid solubility and according to Saksena[13] it has lines in its Raman spectrum at 2880, 2955 and 3202. It should presumably be odorous, but is actually odorless.

SURFACE TENSION CHANGES

In 1938, Devaux[14] told of his experiments which he considered justified the conclusion that perfume intensity can be measured. The basis of his method was that when an odorant was brought near to a mercury surface dusted with talc, the talc was scattered. A typical experiment was as follows: The petal of a rose was fixed to a glass plate by means of gummed paper and the plate was turned over and placed over a mercury surface which had been cleaned and dusted with talc; the plate of glass rested on strips of glass 4 mm. in thickness which rested on the surface of the mercury. The rose petal was therefore not in contact with the mercury (or talc) but in an enclosed space just above it. According to Devaux, "one can then see the talc below it being slowly pushed out towards the edges of the mercury. The movement is slow but regular, and of such a kind that after a few minutes there is a slowly growing space beneath the flower. One can thus trace the emission of the floral perfumes by the adsorption of the perfume by the mercury surface." Other flowers, lily, jasmine, nicotina, elder-flower, pink and privet gave similar results whilst non-odoriferous flowers and plants produced only a slight disturbance which Devaux attributed to the evolution of water-vapour.

What appears to take place is as follows: The volatile constituents of the rose-petal or whatever is used, is adsorbed on the surface of the mercury. This changes the surface tension so that the talc is repelled.

CONCLUSION

The changes that take place on exposing solutions of odorants to ultra-violet radiation, especially the change from true to colloidal solution, offer a line to develop for the detection of odorants. Perhaps the most useful work would be that directed to a study of the influence of the wave length of the radiation. Several other phenomena lend support to the view that there must be a close connection between odorant properties and behavior on ultra-violet irradiation.

The spray electricity of odorants is an exceedingly interesting phenomenon. It probably offers the best chance of a means of detecting and measuring odors. Much more work, a comprehensive investigation of hundreds or thousands of odorants and non-odorants and their electrical behavior in spray is required before the true value of this method can be assessed. It is likely that surface tension effects come into it and it may prove that the spray electricity is a measure of the lowering of the surface tension of the solvent by the solute rather than a true measure of the odor. Devaux's method of dispersing talc on a mercury surface by the proximity of an odorant is almost certainly due to surface tension effects and it is more difficult in manipulation and less easily subject to accurate measurement than the spray electricity method. If it should transpire that the spray electricity method, when checked and rechecked, is reliable, nothing simpler or better could be wished for.

A marked correlation between Raman shift and odor has been demonstrated and if future work establishes and confirms this we shall have available a qualitative odor detector.

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Short Adages

by R. O'MATTICK

GLOSSARY AND ABBREVIATION GUIDE

	FORMERLY MEANT	NOW MEANS
F.F.C.	Free from chlorine	Find full container
C.R.	Chemical reagent	Container returnable (if not smashed)
U.O.	Unique odor	Unfilled order
R.O.	Repeat order	Reply omitted
n/c	No charge	No can
S.P.	Ship promptly	Sale prohibited

A FRIEND of ours needed 5000 gallons of alcohol so he planned to cable to a friend of his in Puerto Rico as follows:

"IN URGENT NEED OF 5000 GALLONS OF ALCOHOL. PLEASE CABLE REPLY AT ONCE IF YOU CAN SHIP IMMEDIATELY"

Our friend, a man of much action and few words, after having written out a rough draft of the cablegram, realized soon enough that his message was too wordy. I can eliminate "in urgent need," he said, for were the need not urgent why would I cable in the first place. And why say "alcohol"? He knows that I do not cable to Puerto Rico for glycerine or for spearmint oil. Furthermore, "gallons" is unnecessary for that is always the way in which alcohol is measured out when anyone is measuring it out. I will just say FIVE in the cable, *c'est tout!* He will know that I mean five thousand gallons and not five or five hundred and that I am in urgent need and that it is alcohol and if he has it he will reply. But the telegraph office young-lady, when she was asked to cable just the word FIVE, thought it was a spy message and did not put it through. He did not get the alcohol and even if the cable had been sent it would have done no good because the alcohol was not there and even if it were you have to come and get it and bring your own drums and provide your own ship with captain and crew and steering gear thrown in and cigars for everyone at the docks.

* * *

Thanks are deserved by U.S.I. for the interesting and timely note on Essential Oils Used As Denaturants in that informative U.S.I. CHEMICALS NEWS which appears every month in THE AMERICAN PERFUMER.

* * *

But while we like to read the U.S.I. CHEMICAL NEWS very much, what we would like to read even more from the boys at U.S.I. is a letter stating that the twenty drums of alcohol will be coming any day now.

* * *

And there is no intention on our part to slight in any way the other producers of alcohol. A letter about twenty drums or even ten drums from any one would be welcome.

* * *

There are many other things which would be welcome, not excluding a vacation.

"Mr. Weston wants a French-English—English-French dictionary . . . He wants to name our new concentrate himself!"

For these many months (our Spring Fever starts coming in the early part of winter) we have been contemplating a bold move but we have courage enough only to admit that we lack the courage to go through with it. Our plan was to have the Editor of this Journal state in *bold type* in that vast area of space which it is our chore to cover each month with the effulgences of our column, that SHORT ADAGES does not appear because Mr. R. O'Mattick is on vacation. Our fondest hopes would be realized were myriads of our readers to plague the Editor with phone calls, letters, telegraphs and cables to learn why we were away and just when we would return so that they would not have to miss reading our wit and wisdom. Unfortunately, there always lurks that deep-seated fear that were we to depart for a vacation, or altogether, no one would miss either us or our column and the Editor would suddenly wonder why we should receive any portion of the valuable paper-quota at all.

* * *

We hope there will be a flood of protests about our going on vacation.

* * *

On second thought we won't go! There will be no income during our absence and then how will we buy the wife that mink coat this summer for next winter.

* * *

(This is a slight OVERSTATEMENT to impress the reader how much remuneration Mr. R. O'Mattick receives for writing this column. He has to write at least two and one-half columns to buy a mink coat for anyone.—Editor's Note)

* * *

Mr. A. Goodbuy informs us that the Glossary has helped him to save a great deal of time. After looking over the abbreviations and their present day meanings, he does not waste so much time trying to get the things that he knows he can't get.

Air Cargo Transportation Merits Investigation

Remote marketing areas serviced more quickly . . . Affords outlets to dealers who were unable in the past, due to limited facilities, to take on additional lines or to stock them in larger quantities

by GEORGE E. BAUER

TIME saving as a result of speed through the use of air cargo transportation is becoming a factor in changing numerous methods of merchandising goods. It permits a faster turnover with more transactions performed with existing facilities and capital. Heretofore less favorable marketing areas, because of remoteness, can now be serviced more quickly and thus be developed through more intensive sales efforts.

The average manufacturer will be interested in any development that stabilizes the costs of raw materials, allows maximum use of equipment, brings overhead expenditures into proper alignment and affords outlets to dealers who were unable in the past, due to limited facilities, to take on additional lines or to stock them in larger quantities. Similarly, the dealer will be interested in any program which enables him to present a greater variety of products to the local market without incurring expensive inventories, higher rentals or additional capital loans. Air commerce, or the merchandising of goods by fast airplane transport, merits investigation by both manufacturer and dealer.

RAPID METHOD OF MERCHANDISING

The more costly the goods in transit, the more are the benefits derived from a faster method of merchandising, as represented by air transportation. Perfumery products are made, in part, of certain raw materials which are both high in cost and subject to price fluctuation. A shortening of transit time is highly important in this industry. The finished goods are also high in price, and call for a considerable investment on the part of the merchant. Here, too, this method of shipment makes for a less costly and hazardous operation.

Shortening of transit time is highly important to the industry

AT PRESENT THE COST IS HIGH

The fullest development of air transport in merchandising goods, including perfumery products, depends upon two factors: cargo charges and time saved.

The cost of air cargo transportation is admittedly high at the present time. It is reported to be from three to six times higher than the fastest form of railway transportation. If railway express charges, with pick-up and delivery, come to about twelve cents per ton-mile, the comparable air transport charge, until recently, was close to seventy cents. Lately this has been reduced, on some articles, by about one-half. After the war this same unit is visualized by Dr. Edward Warner, vice-chairman of the Civil Aeronautics Board, at about fifteen cents. There is no likelihood in the immediate postwar period of air being cheaper than rail shipment.

However, it would be amiss to stop with the comparison at this point with considerations based solely upon costs.

A comparatively new merchandising element calls for consideration. It is time. We have become accustomed to the involvement of time in thinking of personal transportation. Salaries and living expenses figure largely where executives of companies do any extensive traveling.

Time economy when applied to tangibles is somewhat less easy to visualize. The production of perfumes and cosmetics in the United

Frequent and rough handling is avoided

States involves the use of expensive raw materials, which often have to be transported considerable distances. Vetivert from Reunion, oil of rose from Brazil, sandalwood oil from India, are only a few ingredients that come from distant places. The quality of these oils is sometimes hard to maintain, as much handling and exposure to changes in temperature can cause deterioration. As an example of this facile means of transportation, chicle, while not a perfumery ingredient, is now being transported by air from jungle areas to seaports.

Other indirect benefits are obtained. High priced materials are naturally subject to theft. Prompt delivery from place of origin to destination tends to cut down this hazard. Frequent and rough handling can be avoided. Leakage from damaged containers is thus less likely. Heavy boxes, necessary for surface transportation, are eliminated, effecting a saving in the cost of the boxes.

HOW PRICES CAN BE STABILIZED

Price instability is another hazard which can be controlled through the use of air transport. Sizable losses have occurred in the past when essential oils have sold off in the New York market while merchandise has been in transit. Faster flow of material, often only a matter of a few days by air as compared to weeks or even months by sea, offers better price control, and does away with the necessity of offsetting the possibility of loss through hedging.

In dealing with products which are as costly as sandalwood at $7.00, ylang-ylang at $35.00, vetivert at $35.00, and oil of rose at $30.00 (per oz.), it is evident that quite a large amount of money must be tied up in inventory. With air transport smaller, more frequent shipments become possible. Within a few days the entire cycle from point of purchase to delivery can be effected. Thus, a business can be conducted with a smaller capital investment, and on a sound credit basis. Excessive stocks need not be carried, effecting a saving in rent, supervision and insurance.

Advantages also reveal themselves in the functions of distribution. Air commerce requires a new orientation on that score, too. No longer will a manufacturer located in a smaller community seclude himself as a domestic manufacturer. Any city on this continent, such as Rio de Janeiro, Santiago or Lima, is only eighteen hours away from the United States. To do business with these cities requires only one-sixth of the time formerly required to trade between New York and San Francisco. Our supposedly domestic business policies have been internationalized.

BIG SAVING IN TIME ECONOMY

Just as the manufacturer is internationally situated with regard to sales outlets, the dealer in perfumery and cosmetic products must become more effective in distribution of goods of all kinds. Store owners, even in small communities, will be less hesitant in stocking merchandise if they know that they will not have to invest in large inventories. Small lots can be replenished in short order through air transport.

Certain previous attitudes require reevaluation in this fast moving age. It may no longer be considered economical to pay the lowest transportation charges possible, when money is offset by other considerations. The higher air transportation costs may in many ways be ignored because of savings in time economy which has reached into all ramifications of business practice. Air commerce has reached the stage of development where it is of primary importance that it be taken into consideration and the forward-looking business man is the one who will survive stiff post-war competition.

What's in a Name?

Mrs. Carmel Snow, of *Harper's Bazaar*, has just recently returned to the United States after spending some time in Paris.

At a large fashion group meeting recently she discussed, among other things, the importance of a name. To wit: G. I. Joe and Channel No. 5. Many Americans cannot pronounce the names of some of the French perfumes, and have settled on Channel No. 5 as a safe bet. Channel's salon does not open now until noon, and closes at three, but a double row of service men blocks long begins to form at nine in the morning.

Henna Consumption High

Approximately 160 hectares of henna are planted around Azemmour and Mazagan in French Morocco, as well as in the vicinity of Marrakech, according to the foreign press. Domestic consumption is high, and imports are resorted to because local production is insufficient to meet demands.

A well-organized henna plantation will produce from fifteen to twenty years, depending on soil and care, but it has been found advantageous to replant every three years.

Protective Cream for Army Use

More than 1,250,000 four and one-half ounce cans of flashburn protective cream were bought last year by the Army. This cream is intended for use by tank crews, and soldiers using bazookas and flame throwers.

In application, a layer of cream is used thick enough so that the skin does not show through. Users are advised to allow five minutes for drying time. When the film becomes thinned, another coat must be applied. Soap and water will remove the cream readily.

The agent possesses no curative properties, but it provides protection from sudden flashes of flame. It was first developed by the Naval Research Medical Institute, and was recommended for Army use by the Armored Medical Research Laboratory.

Twelve cans, each of which contains enough for three applications, are packed in a carton, and nine cartons in an export container.

Cosmetic Trends in the Middle West

Cake leg make-up gains popularity over liquid leg lotion throughout the South . . . Cream shampoo sales mounting to a point that is depleting all current supplies . . . New deodorants offered for sale at special prices

by JEAN MOWAT

NEW trends on the cosmetics horizon give some indication of what the postwar years may bring, although as change is the only thing of which a buyer can be sure, even this may alter from day to day.

The national presentation of unit merchandise, such as nail enamel, lipstick and face powder, has been of widespread interest, as many stores through the Middle West have permitted the national form of advertising to carry their share of the plug. Another point which buyers all through the Middle West make is the growing importance of treatment creams. A buyer summed this up as follows:

"When the twenty per cent tax went into effect we did such an enormous business, from well-stocked lines, that many women who tried 'to cover' for a long period did more for us then than we realized. Usually sales had been made on merchandise for which there was a call. But as women were out to save money they bought lavishly. Our following month's figures showed it. But today, a year later, we not only have made up *over* that twenty per cent handicap we had, but will close our first half of the year well over it, and our quota. To us it means several important factors. Women were introduced to more lines. They tried new products, as some they formerly used were no longer offered. Having such an abundance of merchandise in finer cosmetics than most of them had been in the habit of buying, they used them more freely than when they purchased only a jar of cream, or one stick of rouge at a time.

By last June we began to have repeat orders on much higher priced merchandise than formerly, and found it was, in many instances, from regular customers who had found a line they liked much better and wanted to use it again. The tax, which seemed to stop all selling, has definitely increased the sale of finer cosmetics." The buyer is a leader in the middle western area and has spent many years studying trends in her own store and visiting others.

LEG MAKE-UP IN CAKE FORM

The early summer weather in the Middle West centered attention on leg make-up, but then followed a cool spell and all sales dropped. Reports of chain stores indicate that there is a new straw in the wind of fashion—cake leg make-up, especially designed for this use. Two months ago it began a slow movement in the South. Today stores with buying offices in the Chicago market cannot obtain enough to supply their stores throughout the country, especially Southern stores.

A prediction of this trend was made in last month's article but it is now growing into a new place in current retail drug store sales. On the other hand, department stores which had national reputations say they have not yet been offered this product. Perhaps it is because they find the lotion a much more successful seller than it has ever been. Drug chains in this area which are stocking the cake report that sales are far beyond their expectations, and this is saying a good deal for a product which they are pushing. On the other hand, lotions in these stores have slipped somewhat in sales volume.

In this connection one might mention, in passing, that it was the deep South that first accepted the 2-thread silk hose when makers found it impossible to sell it to Northern stores. Much the same situation has been apparent in the sale of cake leg make-up.

CREAM SHAMPOO SALES UP

There are signs which carry the suggestion that a *clear* head in the morning is usually imperative, but it has remained for the makers of cream shampoos to make a new slogan in which a *clean* head is equally imperative. When this was introduced last August there was some interest. Stores such as The Fair, Chicago, reported early in the year that it appeared to be a winner. Today chain drug stores, and their executives who have tried it, report on it favorably. From their stores all through the country the demand is so heavy that one chain being supplied by four manufacturers finds it is still unable to supply the demand.

Retail stores that took it on with some conservatism have lost all of it, for they have found sales mounting to a point that is exhausting all current supplies. Women buyers have tried it, so have their salespeople, and the reply is based on personal tests all of which are highly favorable, for this is a product that can well compete with the finest of the liquid soaps offered for shampoos.

WIDER USE OF PROTECTIVE CREAMS

"What has reached its peak"? was a question put to many buyers. Careful consideration was given and then the answers came: "Everything is good . . . (hesitation). But wait . . . vanishing creams! Now where are they in total sales?" Papers were

shuffled, charts consulted and even the stock books. "Not such a good name after all . . . it seems to be doing that kind of an act. Yet there is a change that is new.

"Tinted powder bases which we've been offering have had an acceptance far beyond what we anticipated in the way of orders. These keep the face smooth and the tones ranging from white, or an off-white, to the deepest of tans, have made it something easy to sell. Also, women like its effect on the skin, for it seems to keep it moist and also is an excellent base. We prefer to call them protective creams as far as department store selling is concerned," reported these buyers. The drug stores merely stated it was an increasing sale. Because these protective creams can be used without powder they have a wide acceptance, as many women feel that powder is too drying, especially in cold weather. This may be one reason for the very wide sale. It's extensive acceptance through the South, despite hot weather, is used, say women who like it, because it does not cake and leave a streaky powder effect. That, as one can understand, would make any product sell in a hot climate.

LEG MAKE-UP SHADES VARY

While leg lotions and cake leg make-up have a definite place in the current scheme of selling, there is a growing acceptance of leg tints, which give a light tan through to bronze, so that a woman who does not want to wear stockings may well look as if she had on the sheerest of hose (and some run an eye-brow pencil up the middle of the back to give this illusion). As the tints now offered are waterproof one can shower, for only a good lather of soap and water removes it. While most buyers agree that a fresh application is desirable for smart legs, most of the users find it is good for two days.

DEMAND FOR FLORAL SCENTS

The ever-growing importance of floral scents in perfume and in colognes is a sure sign that summer has come and there is a desire to carry out this effect in the lighter odors. This is true in the sales of all types of stores and while there is little comment on either cream or liquid colognes either and both are selling. Today a woman takes what she can obtain and uses it to the best of her ability. There is a slowly-growing demand for the cream colognes, which may not be apparent for some months, but those who have found it agreeable to their skins are repeating it in the larger bottles. The light odors in talcum are also favored.

NEW DEODORANTS NOW OFFERED

All through the Middle West stores are featuring deodorants. Kansas City, Des Moines, Omaha, St. Louis, and Indianapolis—where spring has come and gone—are all pushing the idea of how essential this fact of freshness is for summer-time enjoyment. Many of the stores are introducing new preparations in this field and offering them at special prices.

Too many women need education in summer care of the skin, and the first to make this an important fact in current presentations were two stores in Indianapolis. Wasson's used a color announcement to stress the smartness of a summer-sheer make-up. Such items as skin freshener, cleansing, retiring and cream tone creams were included, together with cream rouge, lipstick, foundation tone and face powder. And each item was cleverly featured in a half-page ad telling the importance of summer care of the skin. Yet it was subtly suggested that the list be purchased for that skin tone beauty summer demands.

COSMETIC CARNIVAL HELD

Block's, also of Indianapolis, where it does become very warm in the summer, held a "cosmetic carnival" last month (April 20) and carried out the idea to its conclusion by having a group of 14 leading experts from that many companies preside as emcs at this function. There was as much attention given to the right selection of perfume, nail polish, vitamin toning for the skin, as to the treatment lines. In announcing this affair a half page was used to give detailed information, and how these experts would help to make any woman's summer skin treatments easy.

Duluth and Chicago worked in their particular offerings and ideas for last month, and for the rainy month of May as part of the national program on skin treatments. These included soaps, and the tops in the newer ideas in creams that are predicted to retain one's 35-appearance into double that number of years. Of course, the cosmetic trade is the only one to realize that no woman in business ever passes that age. Detroit stores also stressed similar items for spring-summer.

When general merchandise managers of chain stores complain that if their clerks had the same training and initiative as the girls back of the counter in department stores they would show the country exactly what a record in selling could be hung up, it may be a lead as to what may be expected. They pointed out that the girl in a department store not only sold a box of powder, but everything to go with it. In chain stores a girl sold what was requested. They stated that today the right shades in desirable powder is often difficult to obtain and that may be one reason for the swing to cake make-up.

Relic of Ancient Egypt

Further news of the tombs of Ancient Egypt, discovered some two years ago between Cairo and Helowan, but until now uninvestigated, was reported in a recent issue of the London *Sunday Times*.

Among the articles found in the tombs was a perfume bottle and an earthen jar. The hieroglyphics on the stopper of the bottle read "DEN" and on the jar "ADJ-IB." These are the names of the fifth and sixth kings respectively of what is known as the First Dynasty, and their discovery, together with that of stones commemorating other unknown kings, has led Egyptologists to believe that there was a dynasty even before what is known as the First. The relics have confirmed many theories held regarding Ancient Egypt and, it is hoped, will lead to still more important information when conditions allow the finds to be examined at greater length and in further detail.

So does the age-old story of man reveal itself through the inessential perfume bottle—a mere trifle and luxury that has managed to survive the forgotten century in which it was made. Despite the "ravening, raging and uprooted," the wars and inventions and revolutions, and the perpetual cycle of changes operating through hundreds upon hundreds of years, this solitary perfume bottle survives as a symbol of a more gracious way of living.—*Soap, Perfumery & Cosmetics, March.*

Survey of Recent Cosmetic Patents

Registered Agent before the U. S. Patent Office discusses U. S. and foreign patents . . . Any inquiries relating to patents and trade marks will be met with prompt attention . . .

by I. J. FELLNER, Ph.D.

Vegetable composition for softening and cleaning the skin. Wilhelm Schmitz Scholl, Muhlheim, Germany. *German 734924, March 5, 1943.* The composition consists of a paste containing:

Powdered plant germ	40%
Fluid extract of plant germ	30%
Ointment base	25%
Pectin	10%
Stearates and essential oils, to suit.	

Light protecting agent for cosmetic purposes. Schering, A. G., Berlin, Germany. *Italian 393813, May 17, 1940.* The preparation consists of water insoluble materials having ultra violet rays absorbing properties and a wax-like consistency. Such materials may be obtained by substitutive esterification of the umbellic ethylester with cetyl alcohol whereby the cetyl ester of the umbellic acid is formed.

Non fatty ointment base. A. Wander, Bern, Switzerland. *Swiss 223166, April 1, 1943.* A colloidal aqueous dispersion of a light metal compound, such as aluminum hydroxide is mixed with a vegetable gel to form a homogenous cream. The pH of the preparation is suitably adjusted to 6.5 by the addition of acid. The ratio of metal dispersion to gel is 1:3.

Insecticide. To the Harvel Corporation, N. J. *U. S. 2368709, Feb. 6, 1945.* An insecticide comprising a solution of an insecticidal rotenone product in a petroleum solvent with a chlorinated phenol having an unsaturated hydrocarbon constituent having from 14 to 28 carbon atoms as a cosolvent, said chlorinated phenol being present in an amount of 5 to 20% by weight of the petroleum oil and the said insecticidal product being present in from about 5 to 20% by weight of said chlorinated phenol.

Manufacture of Soap. To Sharples Corp., Philadelphia, Pa. *U. S. 2369372, Feb. 13, 1945.* The process consists in separating impurities from a soap nigre together with a portion of soap of the nigre, diluting the separated material to liberate impurities from the resulting diluted mixture and separating the impurities from the mixture.

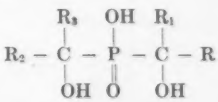
Bleaching agent for living hair. Hans Schwarzkopf, Kommand. Ges., Berlin. *Belgian 466172, June 17, 1936.* The preparation is composed of the following ingredients:

Solid starch	65	parts
Synthetic wax	4	parts
Ammonium chloride	3.5	parts
Ammonium bicarbonate	17	parts
Sodium triphosphate	4	parts
Sodium lauryl sulfonate	4	parts
Water	200	parts
Hydrogen peroxide (30%)	20	parts

Poison mixture for trap gun cartridges. To Humane Coyote Getter, Inc., Las Animas, Col. *U. S. 2368368, Jan. 30, 1945.* A poison mixture for trap guns of the type that discharges into the mouth of an animal to be killed, comprising an alkali cyanide and vaseline in such proportions as to form a soft paste.

Producing musk like preparations. Charles W. Sparhawk, Sparkill, N. Y. *U. S. 2368578, Jan. 30, 1945.* Musk-like material is prepared from the greasy, oily odoriferous animal glands by treating them in pulverized condition first with hydrophobe and then with hydrophile solvents, said hydrophobe solvent being water miscible low molecular weight ether, and said hydrophile solvents being water miscible low molecular weight monohydric alcohols, ketones or esters.

Surface active agents. To Eastman Kodak Co., Rochester, N. Y. *U. S. 2369443, Feb. 13, 1945.* Sulfate derivatives of alpha, alpha' hydroxyphosphonic acids having the formula:



wherein R, R_1, R_2 and R_3 are hydrogen, aryl, naphthalene, alkyl radicals.

Cosmetic container. To Eyelet Specialty Co., Waterbury, Conn. *U. S. 2367457, Jan. 16, 1945.* The container consists of an outer cylinder provided with a plurality of spaced and parallel grooves, an inner cylinder having a slot and being rotatable with relation to the outer cylinder, and a cosmetic carrier having a movable lug resiliently mounted thereon. The lug penetrates the slot of the inner cylinder and follows, moving from groove to groove, the surface ondulations on the inner wall of the outer cylinder as the latter is rotated.

Packaging PORTFOLIO

BARBARA GOULD

BARBARA GOULD: Rose-Glo is the vibrant, lively pink make-up group created for Spring. It consists of lipstick, cream rouge, dry rouge and nail polish. These items come packaged in plastic containers. The nail polish is a cream polish with an even flow from the brush.

RENÉE THORNTON: White suede paper with a narrow gold edging makes not only a lovely but a practical dress for a new package. Each package bears the Renée Thornton crest in gold. The bath salts captured in a simple crystal bottle is capped with blue plastic.

RENÉE THORNTON

DELEX PRODUCTS: A new addition to its toilet water line is Opera, a French type perfume and bouquet concentrate. It comes in a charming hand-painted bottle and an unusual black and white box. The bottle bears a black label.

HARRIET HUBBARD AYER: This new eye cream created specifically to meet the problem of tense lines, is light in texture and eagerly absorbed by the skin. The simplicity of the jar gives it that chic appearance so much in keeping with the Harriet Hubbard Ayer line of fine cosmetics.

DELEX PRODUCTS

HARRIET HUBBARD AYER

MATTHEW PRODUCTS: Sarong Bubble Bath Salts boast of a new and elegant package, having an unusual design in two contrasting shades of green with the name, Sarong, in red. It was specially designed by Egmont Arens.

JOHN FREDERICS: Golden Arrow Colognes are packaged identically in clear crystal bottles spiralled with golden arrow labels. They are gayly topped with gilt plumes and come in two through four, eight and sixteen ounce sizes.

LE JEUNE: Hibiscus Perfume is attractively packaged in a one ounce crystal glass stoppered bottle with Lucite base. The cover is white celanese, cushioned and trimmed with gold sequins and cord. The labels are of the decalcomania type, tricolored in white, pink and green.

DAGGETT & RAMSDELL: This charming six ounce crystal bottle contains a neutral shade of leg make-up which is said to blend beautifully with the soft tones of summer clothes. The bottle is capped with a tall pink plastic top and bears a white and lavender label.

LE JEUNE

PINAUD: Lilianelle perfume, dusting powder, sachet, toilet essence and talcum powder are shown in its exquisite packaging. Bernard Lamotte, the famous French artist, is the designer of the coquettish bell-flowers dancing against a luxurious green background.

SOAPS

Theoretical Aspects of Soap Manufacture

A discussion of the theory of soap boiling and detergent action is brought to a conclusion in this article . . . Soap solution lowers the inter-facial tension by capillarity, the phenomenon of permeating liquids through pores and fibres

by A. DAVIDSOHN

NOW we have to consider the problem of detergent action. This problem is closely linked with general theories of colloid chemistry and the physics and chemistry of surfaces, which was already mentioned in the first part of this article. The days are over or should be over, when it was considered a sufficient explanation for the detergent action of soap, to speak of the hydrolytically freed alkali as the deciding factor for the cleansing action, as it is done in a very modern textbook.[1] For contrast, the problem of the detergent action of soap is well described in a short sentence by *Sherwood Taylor*[2] in his excellent book on "Organic Chemistry": "The value of soaps for cleansing purposes, depends on the peculiar character of their solutions. A solution of a soap is intermediate between a colloid and crystalloid and appears to contain large aggregates of ions associated as a charged group known as a micelle. Its cleansing power seems to be due firstly to its low surface tension, which enables it to wet greasy surfaces, and possibly also to the formation of a "colloidal adsorption compound" with the dirt, which is in this way kept suspended in solution.

This brings us right to the point. It has been assumed previously, that the alkaline component of soap would saponify the fatty parts of dirt, but this explanation is not correct, because unsaponifiable fatty substance and other dirt particles are also removed by soap. Furthermore the alkali of soap, even if it would be present as hydrolytically dissociated alkali, would not be sufficient to saponify the saponifiable neutral fats. We shall demonstrate later which role this alkali of the soap really plays.

EMULSIFYING QUALITIES OF SOAP

Krafft[3] drew attention to the emulsifying qualities of soap, and for the first time demonstrated the existence of alkali and fatty acid side by side through hydrolytic dissociation, which fact he makes responsible for the emulsifying qualities of soap. This theory of Krafft is borne out by the well-known fact, that those soaps, which are strongly dissociated, hydrolytically, at ordinary temperature (soaps from olive oil, resins and others) are very effective also in cold water, whereas soaps, which are only soluble in warm water, exhibit inferior scouring properties in cold water (soaps from stearic acid, palmitic acid, etc.).

In the following we shall try to show that emulsification is not only brought by hydrolysis, but that it is dependent on the constitution of the soap compound. The same should be true of the modern sulfonated products.

SO-CALLED EMULSOIDS

Very interesting contributions about the special qualities of soap in aqueous solutions have been made by *M. H. Fischer*.[4] He points out that the emulsifying power of a compound such as soap is dependent upon its qualities in water. Soaps are so-called emulsoids, meaning substances which in colloidal solutions absorb water into their inner structure. Such soaps, which form liquid systems with water—"water dissolved in soap"—have especially good emulsifying qualities, such as the oleates and linoleates.

[1] *Julius Schmidt*, Organic Chemistry, Engl. Ed. 1943, p. 200.
[2] *F. Sherwood Taylor*, Organic Chemistry, London, 1940, p. 199.
[3] Compare also *Stiepel*, Seifenfabrikant 1901, p. 1187, and Seifensieder-Zeitung, 1908, p. 331.
[4] Kolloidchemische Beihefte 1922, No. 15.

The lowest members of the fatty acid series produce "true solutions," and therefore do not emulsify. The higher we go in this fatty acid series, the closer to soap are the sodium salts of these acids. In the case of the lower fatty acids, a small rise in temperature is sufficient to destroy the emulsions, because then the colloidal solution changes into a "true solution." The sodium soap of the higher fatty acids, such as palmitic acid, stearic acid, etc., do not emulsify at lower temperatures. However, as soon as the temperature is raised to a point, where these soaps represent the system; water dissolved in soap, stable emulsions are produced. A large percentage of the fatty acid of coconut oil acts in the same way as the representative of the lower fatty acids.

SOAP MOLECULE STRUCTURE

On the other hand, it is necessary that the alkali soaps of the higher fatty acids be in a *liquid-colloidal* state, if they are to emulsify. Higher temperature is in this case an advantage.

The soap, representing sodium or potassium salts of fatty acids, contains an inactive and an active part in the molecule. Therefore we speak of a *polar-structure* of the soap molecule. The inactive part consists of the hydrocarbon chain of the molecule, and this is water-repellent (hydrophobe).

The active part of the molecule, which is hydrophylic (water aborbing) is composed of the fatty-acid group, the "carboxyl" group (COOH). In the case of soap, the alkali is the link to this group. In the case of the modern sulfonated products this active part is composed of the SO_3H group (sulfo-group), or another similiar group. From this point of view the theories of Fischer are again explained and verified. For if the two polar groups are too close together, as it is the case with acetic acid, solubility in water is too great, and a colloidal solution cannot be formed. If they are too far apart, in other words, if too many carbon atoms are present, the solubility is too low.

WETTING POWER OF A DETERGENT

Another factor of detergent action is the *wetting-power* of a detergent, which simply means the affinity between the surface of the object to be cleaned and the detergent, as well as the penetration of the detergent-solution into the fabric. In other words the penetration of the detergent between the surface of the object to be cleaned and the dirt to be removed. The first action of wetting, the affinity between surface and detergent, is the electric charging of the surface. The second factor is produced by the capillary activity of the detergent, now to be discussed.[5] For the explanation of interfacial tension the following might be a good example: If a narrow tube filled with oil is put into water with the open end on top, the oil despite its lower specific weight does not flow into the water, because it is held back by the strong interfacial tension which exists between oil and water.

If this experiment is repeated by dipping the tube into soap-solution instead of water, the oil flows out and is replaced by the soap solution.[6] Now this phenomenon of the lowering of interfacial tension is used by *Hillyer* to explain the scouring action. However, in order to understand this theory, capillarity, the phenomenon of permeating liquids through pores and fibres must be explained. If a narrow glass tube is dipped into water, we see that water rises in the tube, against its own gravity. The narrower the tube, the higher will the water rise. There is therefore a certain force, by which the water is drawn into the tube. The force is called capillarity.

EMULSIFYING PROPERTIES

Let us recall once more the experiment cited above. We have seen that soap solution lowers the interfacial tension by capillarity. The soap solution permeates the fibres of the fabric, or the pores of the skin, and lowers the surface tension between the oil and fatty dirt particles. In this way they are loosened, emulsified or suspended. Here we have a combination of wetting-power and *emulsifying properties* of soap solutions.

Now something more must be said about the emulsifying and protective properties of detergent solutions. In fact, emulsification is to a great extent the lowering of interfacial tension, but in the case of detergents another factor is closely connected with this emulsifying power. It is the absorptive effect of the detergent for dirt, which means that the soap, as colloid, absorbs dirt, and/or forms a protective colloid film around the dirt particles and carries it away. This is sometimes called the "deflocculation" or "peptisation" power of a detergent.[7] Besides soap as a "colloidal electrolyte" (*McBain*) charges the dirt particles with an electric charge, thus helping to keep it in suspension, and by the same electric charge given to each particle, hinders the agglomeration of the particles and their sedimentation. The absorptive and protective capacity of soap solutions was well demonstrated by experiments to filter lampblack suspended in water containing soap through a filterpaper. Lampblack suspended in pure water will not filter through, but it does so in water containing soap.[8]

The very important electric effect of soap as a colloidal electrolyte or any other electric active detergent brings us right to the point of the most suitable alkalinity during the washing process. In other words, it is the question of the surplus of OH-ions in the washing solution measured in terms of pH.

SCOURING ACTION INCREASED

It has been found that the scouring action can be increased by the addition of alkaline salts. A number of Russian and American investigators have worked in this direction. *Roschdestwensky*, *Iwanowa* and *Boltunowa*[9] used for additions: soda ash, sodium phosphates, caustic soda and waterglass, and found the optimum of scouring action to be at the pH between 10-11. This checks with the investigations of *Rhodes*,[10] who found the optimum at pH 10.7. *Baker*[11] and others found the same values.

Mention shall be made of the different additions of alkaline substances to soap or to the washing solution, such as the different kinds of silicates now on the market, especially in America. These include sodium-metasilicate $Na_2SiO_3 \cdot 5H_2O$), or sodium disilicate ($Na_2O \cdot 2SiO_2$), and silicates with varying ratio $Na_2O \cdot SiO_2$. Besides their effect of increasing the pH of the soap solution they

[5] *J. Davidsohn* and *A. Davidsohn*, The American Dyestuff Reporter, January, 1940.
[6] *E. L. Lederer*, Kolloidchemie der Seifen, Dresden and Leipzig, 1932.
[7] *Alexander*, Colloidchemistry, 1937, p. 144.
[8] *Spring*, Kolloid Zeitschrift, 1909, **4**, 161, **6**, 11, 109, 164.
[9] Fettchemische Umschau, 1933, **40**, 227.
[10] *Rhodes* and *Bascom*, Ind. Engng. Chem. 1931, **23**, 778.
[11] Kolloid Zeitung 1932, **58**, 245.

have the effect of a detergent.[12] Of course this applies only to washing soap. With toilet soap the effect of too high alkalinity on the skin forbids the addition of alkaline substances, or too high a percentage of free alkali, only an addition of *borax* may be taken into consideration.

MODERN SOLUBILIZATION THEORY

Now we come to the most modern explanation of detergent action, the solubilization theory.[13] But before we explain this new theory we have to return once more to the subject of "polar" structure of soap and other detergents, e.g., sulfonated products (s.a.). The subject of polar structure is clearly explained by *W. V. Thorpe*,[14] when he discusses some special features of biological cell structure and enzymic action.

Soluble molecules accumulated at an interface tend to arrange themselves in a definite pattern if the molecules are unsymmetrical, whereas within the solution the arrangement is haphazard, since forces act upon molecules equally in every direction. The term unsymmetrical is used here in the sense that the molecules have water attractive (polar) groups, e.g., —COOH, —OH, —NH_2, unsymmetrically disposed, as in fatty acid or alcohol, in contrast with symmetrical molecules, such as paraffin, benzene, sugar, or water itself. The unsymmetrical molecules align themselves, so that the polar groups are directed towards the water, and the non-polar groups at the other end of the molecule away from it (orientation). If oleic acid is spread over the surface of the water in a film one molecule thick (this can be demonstrated by dropping a solution of oleic acid in a volatile solvent on a large surface of water and letting the solvent evaporate), the molecules orient so that the carboxyl groups are in the water and the methyl groups in the air. So that there is, in effect, a surface film of paraffin hydrocarbon.

OIL ATTRACTS NON POLAR GROUPS

At an oil-water interface the orientation would be especially favored, since the oil would attract the non-polar groups and the water attracting the polar-groups.

In the cell, which contains both water and lipoids, it is likely that some cell-constituents are oriented in this way. It is even conceivable that the cell membrane is essentially a layer of adsorbed, oriented molecules. Orientation may be an appreciable factor in many adsorption and enzyme reactions, since in this way one part of a molecule could be preferentially presented to a reacting substance.

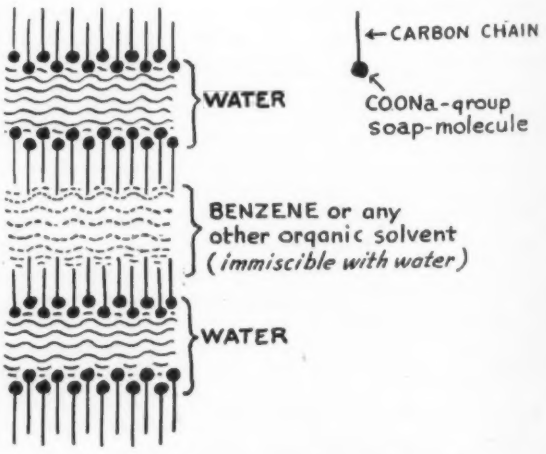
It must be pointed out here that many characteristics of soap solutions, their "polarity," and the now to be described "lamellar" structure bear many resemblances to the structure of the living cell. Hence soap solutions, may well serve as a kind of practical model, to explain some physico-chemical occurrences in the cell.[15]

PASSAGE OF MOLECULES

Now to return to the problem of solubilization. *McBain* defines it as a spontaneous passage of molecules of a substance insoluble in water into a dilute aqueous solution of detergent to form a thermodynamically stable solution. It was deduced from thermodynamic behavior of volatile water-insoluble hydrocarbons in aqueous solution of a detergent that the distribution of the hydrocarbons was not merely caused by emulsification in the aqueous solution, but that it was actually dissolved in the detergent solution. This does not mean, of course, that the hydrocarbons may not be emulsified as well, besides being "solubilized."[16] *McBain* and *McBain*[17] first showed that stable reversible equilibria are actually involved, and that a dilute soap solution will extract *water-insoluble* dyestuffs, not only as undiluted dyestuffs, but from dyes dissolved in organic solvents, such as kerosene, paraffinum liquidum and benzene. On the other hand, each of these solvents will, in its turn, extract part of the dye from the soap solution.

There were, at one time, many explanations for this interesting phenomenon of solubilization, but the best explanation is, that layers within lamellar micelles of the detergent are formed.[18] X-rays gave evidence of this. It may now be stated, that for some typical cases solubilization is due to sandwich-like layers between bi-, or poly-molecular leaflets in detergent micelles. This is easily to be understood if the polar structure of soap, etc., is remembered. The figure given, shows in a schematic form a picture of this lamellar structure. The layers could actually be measured in terms of A, e.g., in the illustration the layer water-to-water may be some 130 A thick. (Angstrom Unit: the practical unit of wavelength of light. 1 A = 10^{-10} metres, or 1/10 millionth millimetre). The figure shows how the COONa group is oriented towards the water, and the hydrocarbon-chain towards the benzene. It must be mentioned that the solubilization can now be measured, as well as the passage of these solutions through membranes. As *McBain, Merrill* and *Vinograd*[19] have shown, solubilization may occur in non-aqueous solutions as well. Apart from the importance of this fact for other branches of industry (e.g., lubricants), this seems to me to be especially important for dry-cleaning and solvent extraction processes in oil industry.

[12] *Ch. L. Baker*, Ind. and Eng. Chem. Sept., 1931.
[13] *McBain*, "Solubilization and other Factors in Detergent Action," in "Advances in Colloid Science," Vol. I New York, 1942
[14] "Biochemistry for Medical Students," London, 1943, p. 34.
[15] See also "Cytology and Cell Physiology," edited by *G. Bourne*, Oxford, 1942, p. 30 and 70.
[16] *McBain* and *O'Connor*, Journ. Amer. Chem. Society 1940, p. 2855. The earliest observations of solubilizations were made by *Engler* and *Dieckhoff*, Archiv Pharm. 1892 p. 561.
[17] J. Amer. Chem. 1936, p. 2610.
[18] *McBain*, Nature 1940, p. 702, *Krishnamurti*, Indian J. Phys. 1929, p. 387, Thauss, Zeitschrift fur angew. Chemie, 1930, p. 570, Erdöl und Teer, 1933, 231, *Hess*, Kolloid Zeitung, 1939, p. 40.
[19] J. Amer. Chem. Soc. 1940, p. 2880.



A schematic picture of lamellar structure of a soap solution and an organic solvent

FLAVORS

Hoffman's Record Due to Rigid Control

Hoffman Beverage Company's manufacturing routine leaves nothing to chance . . . From the time water leaves the ground until it is in the bottle, it is purified, deaerated, cooled to constant temperature, carbonated and sterilized again

ONE of the landmarks of Newark, N. J., is the huge "skyscraper bottle" atop the plant of the Hoffman Beverage Company, a replica of its Pale Dry Ginger Ale. It is all of 57 feet high and holds 55,000 gallons of water for the fire sprinkling system. It typifies the unusualness of the Hoffman enterprise.

It is doubtful that many food processors take any more pains to produce a sterile product than Hoffman does. Control over purity begins with water and carries through every single ingredient and operation until the beverage is in the bottle. Even then plant bacteriologists take random samples of each batch. These precautions are observed for only one reason—it pays. Any food manufacturer might profit by observing the same care in sterilizing operations.

ABSOLUTE STERILIZATION REQUIRED

As no preservatives are used in Hoffman's natural fruit base beverages the mix *must* be absolutely sterile to keep. So "beginning at the beginning" water obtained from three 600 ft. artesian wells is first softened and then given its initial sterilization by automatic ozone machines. Refrigeration follows, the water temperature thus being reduced to thirty-four degrees Fahrenheit.

Reprinted from "The Glass Lining"

WATER CONTAMINATION AVOIDED

Further purification is accomplished by sterile filtration before the water is deaerated in a specially designed stainless steel vacuum chamber, something new in processing beverages. In entering this, water is forced through spray nozzles at the top and break into tiny droplets which explode as they pass through a 29½ in. vacuum. This operation is comparable to reducing milk to a powder in a vacuum dryer. All the occluded air in the water is taken off through a vapor outlet. The deaerated water passes from this unit to carbonators where under pressure, carbon dioxide is impregnated. This water has a great affinity for it and accounts for the fact that a bottle of Hoffman's beverage will remain sparkling after 48 hours exposure to air.

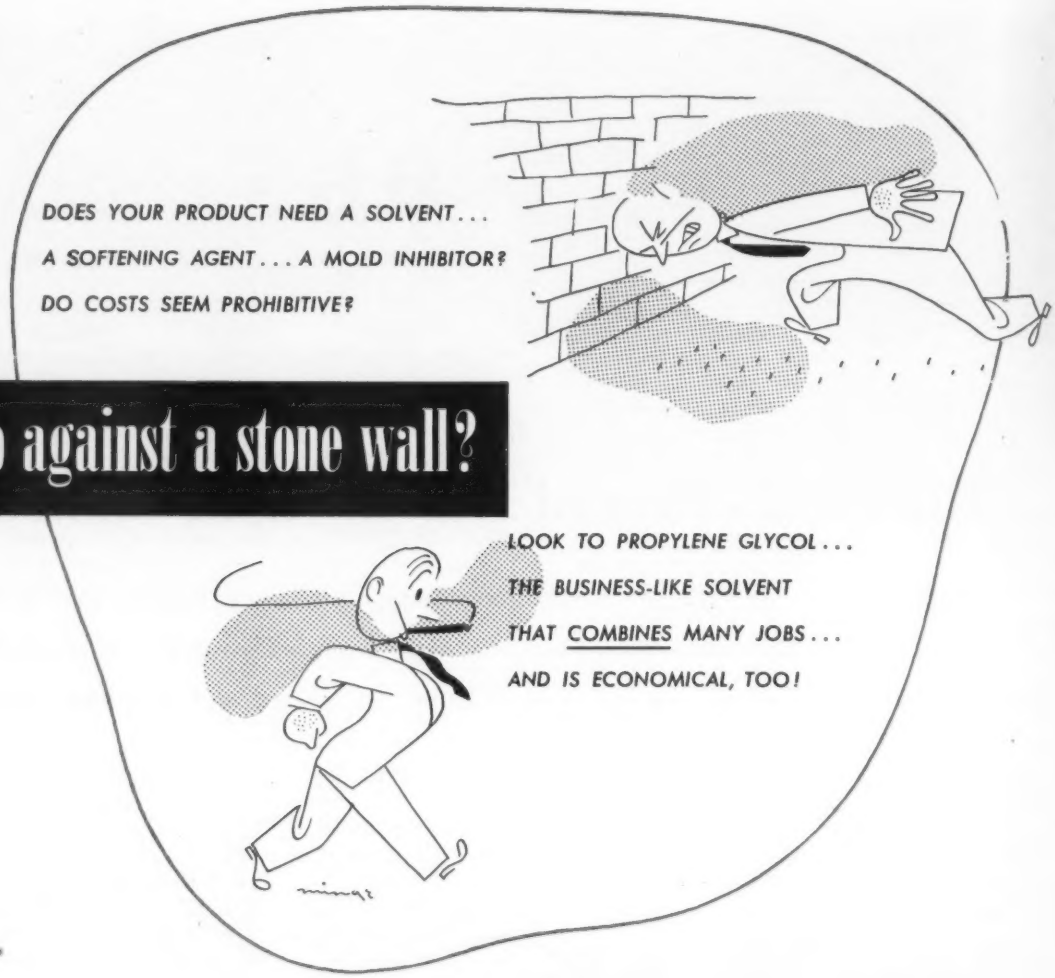
One more precaution is taken to avoid water contamination. Just before bottling takes place, it passes through an utra-violet ray machine. It should be mentioned here that if for any reason a filler is temporarily shut down while bottling is in progress, pumps shunt the water back to one of several large insulated glass-lined reservoirs, and before this water is used again, it is given exactly the same treatment as direct well water.

Hoffman buys fresh citrus juices in frozen state direct from the farms of California and Florida. All juices are kept frozen until ready for use. Jacketed glass-lined kettles equipped with agitators are used to mix the sugar and juice in accordance with exact formulas. There are about 128 of these glass-lined kettles in the plant. A variety of drinks are produced daily. Maximum flexibility and continuous processing is attained by having a sufficient number of units available to treat each mix separately.

RIGID CLEANING ROUTINE

The cleaning these vessels get follows a rigid routine. It is one of the strict requirements and part of Hoffman's complete program of careful planning and control in eliminating trouble.

Hoffman's was among the first plants to use glass piping and there are thousands of feet of it in the plant. You can see water as well as syrups surging through the lines at all times. The pipe is given the same degree of sterilization as every other piece of equipment in the plant each night. Before the next day's run begins, it is flushed with scalding water. Recording instruments further verify the care exercised by the operator.


DOES YOUR PRODUCT NEED A SOLVENT...
A SOFTENING AGENT... A MOLD INHIBITOR?
DO COSTS SEEM PROHIBITIVE?
up against a stone wall?
LOOK TO PROPYLENE GLYCOL...
THE BUSINESS-LIKE SOLVENT
THAT COMBINES MANY JOBS...
AND IS ECONOMICAL, TOO!

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Are costs holding up that new product of yours? Do all the materials it calls for—solvent, softening agent, preservative—threaten to send your expenses sky-high? Dow Propylene Glycol may be your answer . . . the *single* economical ingredient that can do several important jobs at once.

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DOW

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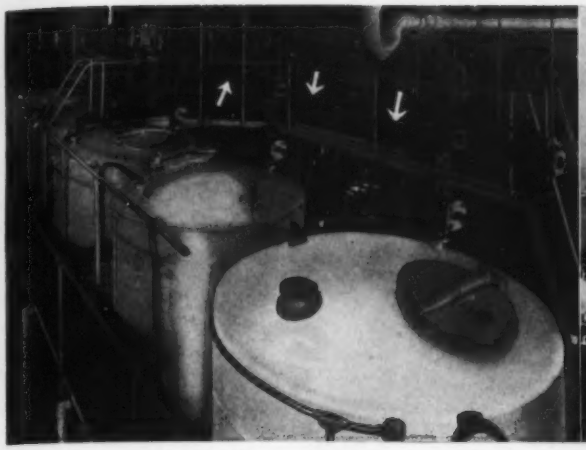
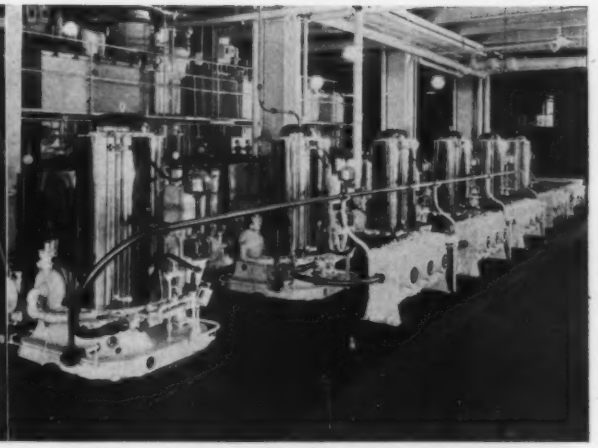


The scope of Hoffman's operations is revealed by the large amount of equipment it uses. Some of the 128 jacketed glass-lined syrup makers are shown.



Carbonation of the deaerated water is done in six stainless-steel units, water then passing through the violet ray equipment in the foreground.

Bottling is done in separate glass enclosed rooms where every effort is made to keep the air sterile. Filler valve mechanisms are completely taken down each night, thoroughly cleaned and sterilized. All possible entrances for air are blocked so they cannot become contaminated and are then resterilized before being started the next morning. The CO_2 gas used for bottling purposes is filtered through special mediums which are provided clean and new each day.

NOTHING LEFT TO CHANCE

The routine is exacting but the personnel is trained to check and double check all along the line. Recording instruments, automatic and semi-automatic gauges, and controls are used wherever practicable. This management does not guess what is being done—it knows!

Four times per day bottles from the soaker are tested for bacteria. No assumptions are made and even the water used for keeping the tanks sterile is checked by laboratory analysis. This strict laboratory control has made Hoffman's perfect record possible.

A careful observation will reveal that Hoffman has studiously avoided filling equipment of any kind which requires washers or gaskets. Ground joints are insisted upon wherever there is a metal to metal contact.

UNIFORM QUALITY OF BEVERAGE

The effect of all this care is reflected in the uniform quality and wholesomeness of Hoffman's products. Few, if any beverage plants are larger in size and none more scientifically operated. Demand always has been so great that it has never been possible to cover very much more than the metropolitan area. At the moment, all Hoffman's beverages are rationed among their dealers.

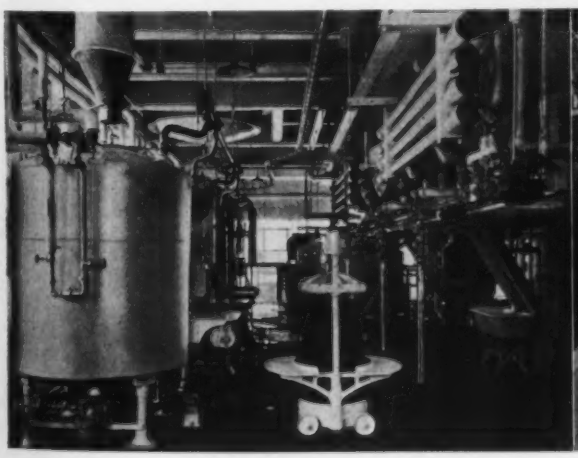
Hoffman was among the first to raise the standards in the carbonated beverage industry. Few companies in any field match the care exercised in production.

Correction

In the March issue, a formula was given for an alcohol-free, glycerine corn syrup as follows:

Corn Syrup (43° Bé)	6 lb. 1 oz.
Glycerine, U.S.P., 95%	2 lb. 10 oz.
Water	1 lb. 5 oz.
Vanillin	1.2 oz.
Coumarin	9.4 oz.
Caramel coloring	To Suit

The coumarin content should have been 0.94 oz.



Sugar syrup is cooked in these jacketed glass-lined cookers (left) then filtered and cooled before being blended with natural fruit base juices and flavorings.

Heart of Hoffman's quality control is the analytical laboratory where trained technicians check every ingredient, and double check on sterilization routine for all equipment.

Aromatics Division

GENERAL DRUG COMPANY

125 Barclay St., New York 7, N. Y.

9 S. CLINTON STREET, CHICAGO 6 1019 ELLIOTT ST., W., WINDSOR, ONT.

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Alcohol Stocks Dangerously Low

THE War Labor Board estimates that our requirements for alcohol during the current year will come to 649,000,000 gallons. The production goal is set at 603,000,000 gallons, so there will be a production deficit of 46,000,000 gallons. This must come out of a stockpile that is already dangerously low, reports Byron V. Crane in the Journal of Commerce and Commercial.

At the end of 1944 we had reserves on hand of about 81,000,000 gallons, but this has already fallen to 40,000,000, or perhaps less. It is not anticipated that depletion will continue throughout the year at this rate, but it is apt to continue, and we may expect to find ourselves with around 30,000,000 gallons on hand by the year's end. This is admittedly dangerously low.

This condition was brought about through accelerated demand, a changeover from molasses to grain as raw material, manpower shortages, transportation difficulties and the cutting off of Cuba as a source for sugar.

INDIRECT MILITARY USE

Of the current production about one-half will go into the manufacture of synthetic rubber tires (about 800 gallons of alcohol go into the making of one ton of synthetic rubber), 353,000,000 gallons will go into indirect military and civilian use. The remainder will be used for military, lend-lease, smokeless powder, anti-freeze, etc.

It is unlikely that any sugar will be released for the making of alcohol at this time, although some manufacturers hold that such a move is feasible. The civilian consumption of sugar has been cut from 10 to 12 per cent under the quota of last year, and it is unlikely that manufacturing would take precedent over human consumption.

One of the contributing factors to the sugar shortage has been the stoppage of the importation of Cuban sugar and molasses. Another is the fact that the sugar beet growers failed to produce the anticipated crop in 1944.

Synthetic alcohol production has now reached a figure that demands attention. Alcohol from this source now amounts to 60 per cent of the entire pre-war consumption.

In normal times the industrial consumption of alcohol amounted to about 100,000,000 gallons. It is expected that after the war we will not find ourselves with an over expanded plant system, as most of the current stepping up has been accomplished through earmarking beverage alcohol. At the end of the emergency beverage alcohol manufacturers are not expected to compete in the industrial field because of the price factor.

AFTER THE WAR, WHAT?

After the war it is anticipated that most of the inexpensive industrial alcohol will come from imported molasses, and from petroleum. This will depend upon many factors in its final solution, however. World-wide conditions, the production of synthetic rubber, the cost of grain, and possible pressure blocks may all determine the raw materials from which this type of alcohol is manufactured. Whatever the material, or materials used, the price of post-war alcohol will not be cheap.

Grant for Sugar Study

A total of $45,400 has been made in six grants for the study of sugar, it has been announced by the Sugar Research Foundation. Dr. Pauline B. Mack, and associates of the Ellen H. Richards Institute, Pennsylvania State College, has received one grant of $20,000 for one year.

OPA Sues Wholesalers

Daniel P. Woolley, New York Regional Administrator of the Office of Price Administration, has announced the starting of treble damage action, amounting to $369,000, against thirteen wholesalers. The wholesalers are accused of charging over ceiling prices on corn sugar, or dextrose, to industrial users during the past year which amounted to $123,042.21. The wholesalers are faced with a permanent injunction which would prevent future over ceiling prices, and with the preparation of pricing records.

Callman Gottesman, Chief Enforcement Attorney, New York Metropolitan Office, who conducted the investigation, stated that OPA regulations had not been complied with in that the wholesalers had not filed pricing records.

Alcohol Restriction

Order L-348, issued by the War Production Board, covers imported ethyl alcohol, defined to include "products of cane alcohol such as but not limited to . . . alcoholic toilet preparations."

After May 7 no one is allowed to ship from a free zone into the U. S. cane alcohol processed in a free zone. Schedule 71 of Order M-300 shall not apply to the alcohol, except that imported free for industrial use under the Internal Revenue Code. No one may process material containing the alcohol unless it was imported before May 7.

Flavor Ratings Amended

On April 4, Preference Rating Order P-140 covering products packed in wooden shipping containers, was amended as follows, insofar as foods and flavors are concerned:

Foods except those otherwise listed, (note that beer, beverage compounds, concentrates and syrups, chewing gum, distilled spirits for beverage purposes, non-alcoholic beverages and wines) are listed under the Miscellaneous Section of Schedule A, rather than under this heading AA-2X

Dessert products, fillings (pie and cake), food coloring, marshmallow and marshmallow cream and puddings AA-4

Flavorings AA-3

Ice cream AA-3

Beverages, non-alcoholic as defined in Schedule A of Order L-103-b (for returnable multiple trip containers only AA-5

Beverage compounds, concentrates and syrups AA-5

Odorless Garlic

An odorless liquid garlic is on the market under the name of Bell's Liquid Garlic. It is stated that when the garlic liquid is placed on the tongue it may give off a whiff of the characteristic garlic odor for a minute, otherwise the product is odorless. The process of manufacture is a secret.

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Technical Abstracts

Manufacture of a Tea Substitute by Fermentation of Finely Cut and Dried Leaves. *Belg. Pat. 444,463.* Fruit tree leaves are cut, dried, impregnated with essential oil and fermented for about 15 minutes. After drying, citric acid solution is added. (Through *C. A.*, **39**, *566, 1945.*)

Cranberry Sherbet. B. I. Masurovsky, *Food Industries*, **16**, *149, 1944.*

Granulated cane sugar	12 lb.
Corn syrup solids or dextrose	6 lb.
Water	14 qt.
Cranberry puree	10 lb.
Lemon juice	1½ qt.
Ice cream mix	2 qt.
Locust bean gum	2 oz.
Gelatine	1 oz.
Cherry color	as desired

Directions: To prepare the cranberry puree blanch 10 lb. of cranberries by pouring about 1 gal. of hot water over them; allow to stand for two minutes then drain. Place the blanched cranberries in a double boiler, add 4 lb. of sugar and 6 qt. of water. Cook until the skins crack. Strain through a colander and cool.

Blend the cane sugar, corn syrup solids or dextrose, locust bean gum and gelatine by mixing them dry. Heat the water to 180 deg. F. Add the prepared cranberry puree, lemon juice and color, mix well.

Put the combined mixture in the freezer. Start whipping and freezing for two minutes, then add the ice cream mix gradually. Continue freezing until an overrun of about 50 per cent is obtained. Remove the finished sherbet to containers and place in the hardening room at about 15 deg. below zero F.

Malic Acid—Identification of. H. Caron and D. Raquet. *J. Pharm. Chim* **(9)**, *2, 335 (1942)*; Through *Chem. Abstr.*, **38**, *3218 (1944)*. Hot oxidation with 1 drop of 1 per cent potassium permanganate of 5 cc. of malic acid solution in presence of 2 drops acetic acid gives oxalacetic acid; on saturating the solution with ammonium sulfate, adding sodium nitroprusside followed by ammonia solution so as to overlie the solution, a violet ring forms fairly rapidly; on shaking, the solution acquires a violet color which disappears after a few minutes. The test is sensitive to 1:4000. Under the same conditions tartaric acid gives no color; lactic acid in concentrated solution, a stable blue-green color; citric acid, a violet color rapidly turning blue. These colors are stable and cannot be mistaken for the unstable color given by malic acid. (Through *J. of the Amer. Pharm. Assoc.*, **34**, *3, 1945.*)

Pepper Substitute. Fat acids from C_7 to C_{15} obtained by oxidation of paraffin, are treated with primary and secondary aromatic and aliphatic-aromatic amines. (Through *C. A.*, **39**, *566, 1945.*)

Preparation of a Coffee Substitute. *Belg. Pat. 443,786.* Vegetable materials contg. pentoses or polypentoses (potato pulp or peelings, flax waste, potatoes, etc.) are boiled with water under pressure at not below 130 deg. The hot mass is evaporated and dried. (*C.A.*, **39**, *566, '45.*)

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NEW PRODUCTS AND PROCESSES

Portable Desk

A portable desk with many industrial uses, such as inspectors, foremen, shipping clerks, etc., is being marketed by Lyon Metal Products, Inc.

It stands on 3-in. swivel castors, and has a positive brake attachment. Overall size is 34½ in. wide, 30 in. deep and 53 in. high (43 in. high in front).

The desk hood provides space for the storage of working papers, and has a smooth 30-in. desk top with a 3-in. overall slope. A large drawer, 24 in. by 28 in. by 3½ in. in size, is equipped with a lock for the safekeeping of important papers.

New Tax Form

I. Baker Printing Co. has introduced a new "nipout" tax form, for income tax withheld by employers.

A New Jet Agitator

A new type jet, which utilizes steam, air, or solution to agitate and circulate solutions in tanks and vats has been designed by The Youngstown Welding and Engineering Company.

Jet Agitator

By installing the jet in the corner, or anywhere along the sides of a tank, the company claims the entire tankful of liquid can be agitated and mixed at the same time. No special piping or additional lines are necessary. The jet has no moving parts to wear out, and can be used on any line which has 10 pounds of pressure or more. Literature and data are available.

Catalogs

The National Wholesale Druggists' Assn. has a new handbook and map which it is offering to those who are interested in distributing through drug channels. The map, a large wall type, is divided into 36 marketing areas, each of which is 90 per cent self-contained. Accompanying it is a 95-page book containing information on each of the markets. The unit is on sale at $3.00.

A new electric timer bulletin has been released by the C. H. Stoelting Company.

The bulletin describes table model stop clocks, wall model stop clocks, precision chronoscopes, combination timers and impulse counters, stop watch controllers. and spring wound X-ray timers.

The Stoelting timers have application in industrial and laboratory timing. Circuit diagrams are included to show correct methods of connecting the various timers in test circuits.

Research data in the various departments of technical schools and universities, in the form of master theses, is now being made available to industry. Master theses that are of importance to industry and research will be indexed in the technical "Digest-Index" issued by the National Research Bureau, Inc. They will be supplied on microfilm through the Library of Industrial Research, a non-profit organization, acting as a clearing house for the exchange of technical, scientific and management information. Many firms in the United States and Canada are members of the Library.

Book Reviews

WARTIME WAGE CONTROL AND DISPUTE SETTLEMENT, Bureau of National Affairs, Washington, D. C. Cloth bound, 576 pages, $6.75. Indexed.

This desk manual contains information on regulations relating to wage-salary stabilization. Rules, procedures, penalties, interpretations, forms, descriptions of standards, rights of appeal, as set forth by the seven regulatory agencies, are discussed. War Labor Board authority and grievance machinery are described.

PHARMACY, Earl P. Guth. 24 pages. Bellman Publishing Co., Inc., Boston, Mass. $.50.

This is one of a series of seventy-five occupational booklets to be used in guidance activities, and for individual reference purposes.

THE CHEMICAL PROCESS INDUSTRIES, R. Norris Shreve, 957 pages. Illustrated and Indexed. Flexible binding. McGraw-Hill Book Co., New York, N. Y. Price $7.50.

This book is intended for readers who want to know how products in the field are manufactured. The author follows modern factory practice in breaking down the actual industrial procedures into unit operations and unit processes. In addition to the usual photographs used to illustrate text, a great many excellent flow sheets are incorporated to show steps taken in manufacturing processes. This is an important new book.

OUTLINE OF AMINO ACIDS AND PROTEINS, edited by Melville Sahyun. 251 pages, illustrated and indexed. Reinhold Publishing Corp., New York, N. Y. Price $4.00. 1944.

The purpose of this book is to outline in a simple and readable manner the essentials of the chemistry and the biochemistry of amino acids and proteins. The editor has attempted not to become involved in theoretical and argumentative aspects of the hypotheses dealing with the chemical structure of proteins. An account of the discovery of amino acids, and of early research workers, is given briefly.

WASHINGTON PANORAMA

by ARNOLD KRUCKMAN

ELMER TYSDAL LEAVES WPB

Elmer Tysdal, for the past two and a half years the steadfast national champion of the cosmetics and toiletries industry in Washington, leaves WPB about June 1, to return to private industry. He will go back to Chicago, his home town, and it is anticipated he will be affiliated with one of the well known firms of the industry in that locality.

Elmer B. Tysdal

Tysdal's retirement as Chief of the Cosmetics and Toiletries Unit of the Chemicals Bureau of WPB will cause universal regret. He has made himself one of the most popular representatives of the industry in Washington among Government officials. At all levels among Government officials it has become a habit to turn to Elmer Tysdal for counsel and for information on any subject connected with cosmetics and toiletries. It was Tysdal's sane, sound and intelligent approach, that taught the Government brass hats in various agencies to realize cosmetics and toiletries are not luxuries but are a very real necessity in the war economy, as well as in normal life. It was his palpable sincerity and knowledge which enabled him to secure many breaks for the industry which otherwise would not have been granted. His sensible appeals on behalf of the industry always commanded attention among his Government colleagues. These relations with his fellows in Government enabled him to do many things for the numerous representatives of the industry who came to Washington with problems which otherwise might not have been solved. Tysdal's only son is fighting in the Army in Germany.

HOW THE UNIT WILL BE ABSORBED

Tysdal's unit will be absorbed by the Medicinal, Chemicals and Vitamins Unit, which is headed by Edward L. Marschner, who in private life has been an official of the Sterling Products Corporation. Mr. Marschner also knows well the whole field of cosmetics and toiletries. The immediate details of Tysdal's work have been assigned to Sylvan Falck, who is familiar with the industry. Mr. Falck is a Government career man. He came to the Chemicals Bureau of WPB from WFA. He had earlier been connected with one of the sections of the Department of Agriculture, functioning on problems involving chemicals and distribution of merchandise.

FRED STOCK LEAVES WASHINGTON

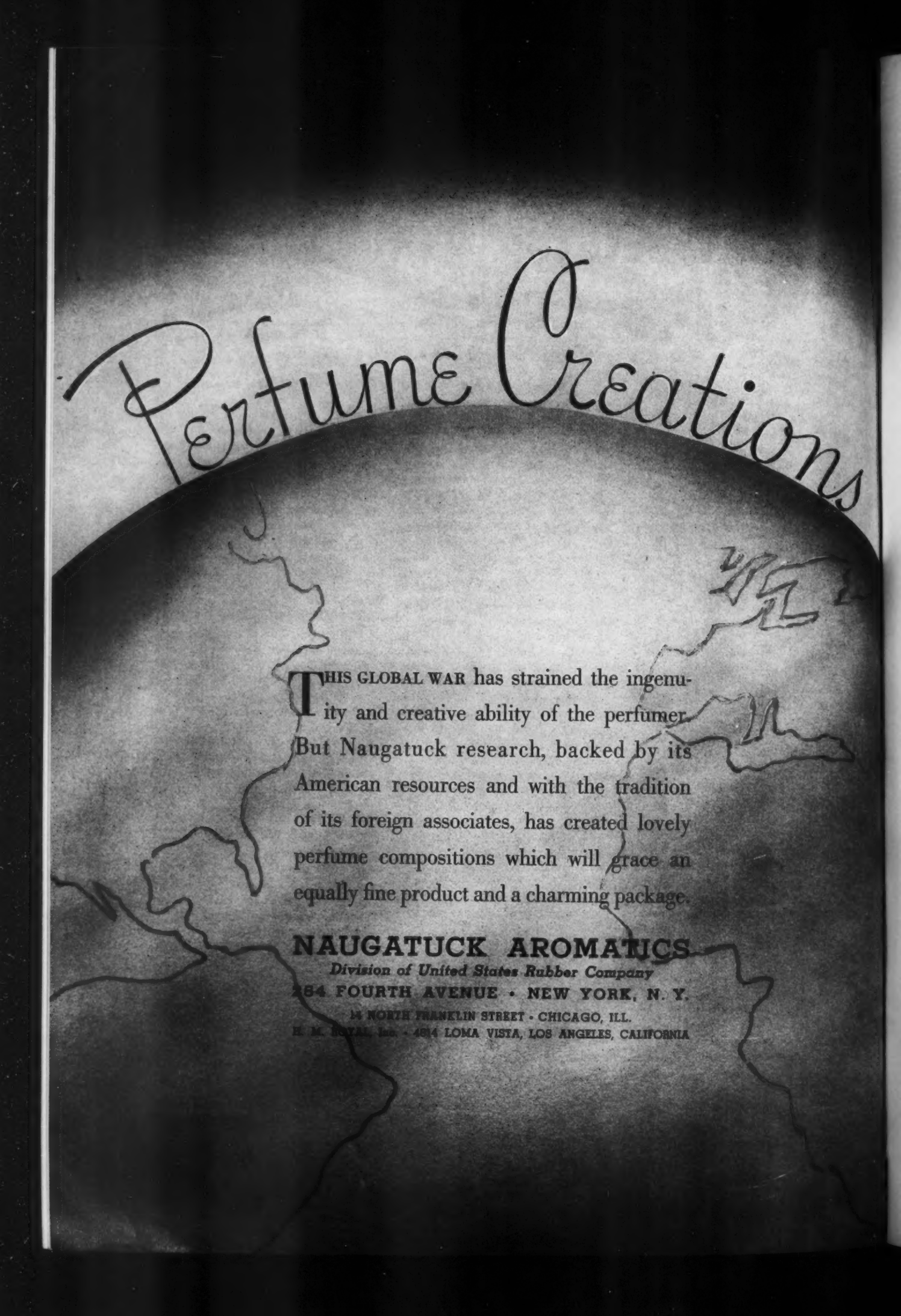
The word also has been passed out that Fred J. Stock, head of the Drugs and Pharmaceuticals Branch of the Chemicals Bureau of WPB, leaves Washington the end of May. Mr. Stock likewise returns to Chicago where he will undoubtedly return to the chain of drug stores which he left on leave of absence to serve the Government. Stock is one of the few men in WPB who came here and started at the bottom in the war economy personnel organization, and worked his way to the top of what is the equivalent of a Division in the Army. He has been well liked among his colleagues in various Government agencies who represent related parts of the drugs, pharmaceuticals and chemicals industries. People of the various industries which focus in pharmacies had the highest opinion of the service they obtained from the Branch under his direction.

REGULATION WILL CONTINUE

The impression seems to have gone abroad here that most of the work hitherto done at the Capital will be done in the many offices scattered around the country, and that controls and regulations will swiftly be relaxed and revoked. It seems very doubtful that controls and regulations will be wiped off the slates. The likelihood is that controls and regulations will be applied in new forms and in new ways.

STEARIC ACID REMAINS TIGHT

Stearic acid is tight, and is expected to be still tighter. The desire of the Chemicals Bureau was to clamp a strong control upon its use, but at the same time to avoid the appearance of too much control under present shifting circumstances. The Order therefore was written and promulgated early in April, providing for use of the material by certain processors and manufacturers, almost solely connected with war or essential needs, but not including manufacturers of cosmetics and toiletries; and it was provided that 75 per cent of all stearic acid must be allocated to the needs of these deferred users. The Order provides that until the 16th day of each month no part of the 25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per cent left, if any, may be distributed to any other industry; and it is provided that of the 25 per cent left in the possession of the supplier, the supplier must set aside 25 per cent—out of the 25 per cent residue—for distribution to those who have preferences or directives or ratings from WPB.

The cosmetics and toiletries industry is entitled to obtain whatever it may be able to find among the suppliers of the quantity finally left in stock with any supplier. It is considered doubtful that there will be much surplus to draw upon in the possession of the supplier. The cosmetic or toiletries processor, who manages to obtain any stearic acid from the residue, undoubtedly will be able to do so by reason of his established commercial relations, or by good luck. Those business people who are in distress for want of stearic acid, distress of the kind that may imperil the existence of their business, may appeal for a supply on the hardship basis. If they prove the hardship, they will undoubtedly be given a directive or a rating or whatever they may need from WPB, and they will be able to obtain some of the 25 per cent set aside out of the residue after the preferential claimants have been supplied out of the original 75 per cent allocation. The volume thus obtained must necessarily be small.

DISTRIBUTION OF CASTOR OIL

Castor oil also will be brought under almost identical allocation, probably before this is published. The system of distribution will be practically the same, and the cosmetic and toiletries industry will be under the necessity of obtaining its supply in about the same manner as it gets stearic acid. The manner of distribution and method of allocation are described in detail because the industry will run into the principle of this system repeatedly as the adjustments are made to the one-front war. The system unquestionably will be used repeatedly with various modifications to fit specific materials and supplies, and molded to particular circumstances.

The point to bear in mind is that there will be relaxations and changes, but when the present system of highly specific controls is modified we will undoubtedly change to a simpler system of priorities. The tendency already is clear. While the system is simpler in paper work, the essential and fundamental control over the use of materials and facilities will remain. Nor does it seem likely that the problems will be solved in a wholesale manner out in the Regional offices and Area offices, as they even think here in Washington. The shift to a new system of priorities, even simpler priorities, will entail new methods, new functions, and will inevitably be confusing for a time.

HOW STEARIC ACID ORDER WORKS

The new stearic acid order limits the possessor to 30 days inventory of the material, and prohibits the supplier from delivering more than would permit the customer to have 30 days' stock in his possession. They will undoubtedly be very tough about the inventory and the supply. Much of the present trouble, among cosmetic and toiletries people, at least, is attributed to the reckless way in which they used up their inventories last Fall when the general assumption was broadcast that the war in Europe was over. This extraordinary error is regarded as the basis for most of the shortage of stearic acid and similar things.

A PICTURE OF RECONVERSION

Many revocations of various Orders are announced daily. WPB Krug himself warns these revocations do not concern important Orders. Apparently they are preliminary steps and at the same time relieve some of the pressure for reconversion action. A typical example is L-29, which limited production of metal signs. It was revoked on April 28. In one week approximately 65 similar Orders were revoked. The revocation of the metal sign Order, permitted the manufacture and distribution of the signs; but it did NOT revoke any controls and regulations which released a supply of metals to make the signs, or manpower, or facilities. In effect, the revocation is chiefly a license to hunt metals, facilities, and manpower. If you can find these resources you are free to order some signs, and possibly to obtain signs.

Here is a sketchy over-all impressionistic picture of the reconversion prospect: War Department has announced some cutbacks to be made the next 90 days. There are some guesses they will be substantial, other guesses that they will be moderate. No one knows, except the handful of brass hats at the War Department and in the White House.

The U. S. Chamber of Commerce stressed the warning that estimates of cutbacks are dime-a-dozen in Washington. Responsible people in Government feel cutbacks and controls will be initiated with caution to keep the war producing machine in gear until the end of the Japanese war. There will be some spot authorization of civilian goods, and some release of facilities to make machinery to enable civilian industry to get into motion. But it also is stressed that the next six months will be the most intensified period of war production. The plan is apparently to permit some gradual merging into civilian production by keeping the necessary war production turning over at top speed. The thought seems to be that by prolonging this program it will be feasible to switch over without over-speed or under-speed.

Almost daily there are new statements stressing the growing scarcity of industrial alcohol. Various war uses make the pinch more severe. WPB has under consideration new plants, and additions to the grain-alcohol plants. Grain distilleries are permitted to use an unlimited amount of corn. The world's largest commercial plant for production of ethyl alcohol from sawdust and wood waste will be in operation by July 1 at Springfield, Oregon. It will make from 10,000 to 20,000 gallons daily, using about 200 tons sawdust daily. Cuba reports it has doubled its production of industrial alcohol this year.

CONTROL ON PUERTO RICO ALCOHOL

Order L-348, concerning imported cane sugar alcohol, was amended, to be effective May 7, placing strict controls on the use of the alcohol brought from Puerto Rico, Cuba, the Virgin Islands and other islands of the Caribbean. This alcohol has been the ace-in-the-hole for some toiletries compounders in the United States. They have been sending to the Caribbean a certain proportion of their compounds, sufficient in quantity when mixed with the Caribbean alcohol, to enable them to bring the resulting mixture into the United States legally as the basis for further

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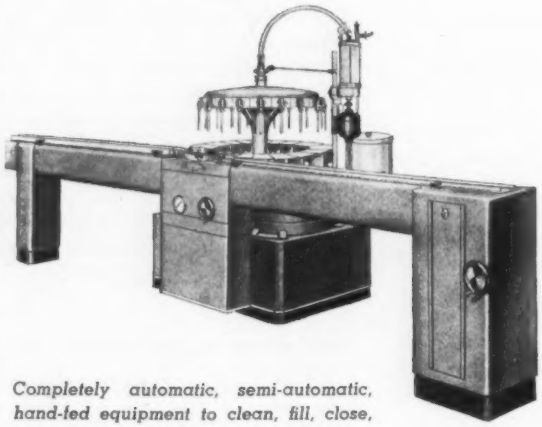

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The newly effective amendment strictly requires that these importers must report to the Federal Government the exact quantity and nature of the essences and other materials they propose to add to the alcohol and mixture they bring from the Caribbean. The new regulations are such that compliance will either make impossible the use of the imported mixture, or will make the cost assessed prohibitive. Government has nothing against those who have been using this method to obtain industrial alcohol for toiletries outside of the restrictions on domestic product. The object of the new regulation is to conserve the molasses from which it is manufactured. The world sugar shortage is so great, and is increasing so rapidly, with no relief in sight, that every possible device has been applied to encourage the production of more sugar.

MORE LANOLIN FOR MILITARY USE

There will be no lanolin for May. Nor does there seem to be any immediate prospect there will be any available for June. Military requirements are increasing. Commerce Department reports there is no hope of receiving olive oil from Spain. The Combined Food Board reports that fats and oils together with sugar are the foodstuffs most desperately needed in Europe. The shortage of fats and oils is constantly increasing. The non-food need for military uses has jumped enormously. WFO-42b cut the use of fats and oils in all soaps, the reduction being 8 per cent under the total used in 1944. Further cuts are predicted by Department of Agriculture in the period between April and June, inclusive.

USE OF LEAD REDUCED AGAIN

Order M-384 further reduced the use of lead in various products, and L-180, late in April, cut the quantity to be used in automobile batteries. Order M-63 placed a tight control on the importation of collapsible tubes in order that the Government might take over all lead brought into the country to use in war production. Direction 1 to Order M-115 was revoked late in April, which means that the restriction which permitted those qualified to obtain only one-third of the permitted supply in April, may take the two-thirds balance due for May and June any time during these months, and may take the balance in full at one time.

Amendment to L-317 establishes 1,200 fibre shipping containers as the minimum for 30 days' inventory, and prescribes the methods by which the user of the fibre shipping containers must establish his "maximum permitted inventory." He is required to add together the totals of each type of fibre shipping container he uses. This gross total constitutes his 30-day inventory. He may take his combined total figure and distribute the various types of fibre containers among them as he sees fit. In other words, within the combined total, the user may determine how many of each of the various types he wishes to establish as his 30-day inventory. Corrugated or solid fibre containers, reformed, reshaped, repaired, or reconditioned, without addition of new container board are not subject to restrictions under L-317. Those who do not keep adequate records covering the use of new fibre shipping containers in 1944 and 1945 may not accept delivery of new fibre shipping containers until WPB has established a quota for them. The prohibition does not affect the small user who does not accept more than $500 worth and those who do not come under Schedule 111. WPB announced that increased requirements of fibre shipping containers inevitably means there will be a reduction in the supply of folding and set-up boxes. No material relief in the supply of containers and boxes is promised until it is feasible to import pulp from Sweden, and, possibly, from other Scandinavian countries.

Manufacturers of metal cans have been told by WPB they may not make cans for deodorizers, essential oils, liquid soap and peroxide. WPB also announced prohibitions against the use of metals for containers of lipsticks, cosmetic cases, toilet articles, permanent wave accessories, do not mean that aluminum may not be used in making such containers. Aluminum is expected to be released for less controlled use in making almost everything in May. Copper also is reported to be on the verge of release. The manufacture of both metals will be limited mainly by manpower and facilities. Those who can find the men and factories will be free to secure almost anything they need.

LEMON OIL ESPECIALLY TIGHT

New peppermint crop will be fully planted by the end of May, and it is reported the first acreage estimate will be reported on June 9, by the Department of Agriculture . . . Spearmint is reported to be in fair supply, but prices are high . . . Lemon oil is reported very tight; it is regarded here as almost off the market. Orange oil is less plentiful, but gives no particular concern . . . The Combined Food Boards have been attempting to settle the debate over the Sicilian lemon oil. Last year it was agreed Britain should receive two-thirds of the available supply, and the United States one-third. By some curious twist of circumstances not explained, we received none. It is maintained this year, when we are entitled to two-thirds of the available supply, we should even be the beneficiaries to the extent of all lemon oil in Italy. It is doubtful if this solution will be adopted . . .

GRASSE DISTILLERS NEED OUR HELP

The flowers in the crop at Grasse in France must be processed with a volatile solvent to secure the much needed floral oil. The solvent presumably was to be supplied from a source in France. The material is allocated on a group basis to the operators in the Grasse region. The arrangements had been made to insure the supply of the solvent. But recently appeals have come to this country asking if the Americans can do anything to make the solvent available. It had been assumed, according to Washington word, that the supply of the solvent would be urged by organized sources in this country. Apparently the cabled support needed by the Grasse distillers did not materialize. There appears to be much concern whether or not the solvent will be received in time to make the floral oils available for American uses as expected.

It is reported French representatives have manifested much concern about essential oils now in Lisbon. They are said to be interested in their release and their shipment here as soon as possible. The report is that the French fear the continued development of synthetic oils may spoil this market for their natural oils.

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AMONG OUR FRIENDS

▸ Milton Stern, assistant sales manager of Magnus, Mabee & Reynard, Inc., New York, N. Y., was inducted into the "Twenty Year Club" at a dinner given in his honor on April 12, at the Hotel Astor, New York, N. Y. Eighteen persons have earned admittance into this Club. Twelve are still active, including P. S. Magnus, president, and R. B. Magnus and J. B. Magnus, vice-presidents. Mr. Stern spent several years in the essential oils industry before joining the staff of Magnus, Mabee & Reynard, Inc. He received his schooling in aromatic chemistry at Columbia University.

Milton Stern

▸ F. W. Miller, treasurer and controller of Bourjois, Inc., New York, N. Y., and R. W. Sandburg, controller of the Andrew Jergens Co., Cincinnati, Ohio, have been elected to membership in the Controllers Institute of America. The Institute is a technical and professional organization of controllers devoted to the improvement of controllership procedures.

▸ Oscar Olin has joined Dermetics, Inc., New York, N. Y., as sales manager. He was connected with Revlon Products Corp.

▸ S. F. Coneybear has been appointed development manager of Evans Chemetics, Inc., New York, N. Y. He will be in charge of the chemical and specialty fields in product development and promotion. Since the outbreak of the war, the firm's research laboratories and three plants have directed maximum effort to chemical warfare, medical and ordnance requirements. Additional facilities are now becoming available for civilian production of chemicals and products in the field of cosmetics, foods and chemical specialties.

▸ Henry Pine is now calling on the New York, Brooklyn and New Jersey perfumers and cosmetic manufacturers for Edward Remus & Co., New York, N. Y.

▸ Marie K. Neary, president of Tourneur Beauty Products, Inc., New York, N. Y., has been named chairman of the Cosmetics Division of the Roosevelt Hospital District Service Expansion Fund. The campaign goal is $1,000,000, to provide new and adequate accident-emergency and outpatient clinical facilities, new laboratories, and additional semi-private rooms.

▸ A girl was born to Mr. and Mrs. S. C. Gamage on April 6. Mr. Gamage is foreign and domestic sales representative of Magnus, Mabee & Reynard, Inc., New York, N. Y. He has been associated with the organization for eleven years, first covering Iowa and Nebraska, then Ohio and New York State, before assuming his present duties.

▸ Herbert E. Perry has been appointed to a sales position in the Chicago territory of Aromatic Products, Inc., New York, N. Y., under the general direction of S. J. Vance. Mr. Perry has been connected with Aromatic Products, Inc., as a perfumer, and has had extensive training in all departments of the aromatic chemical business, under the direction, and in collaboration with, Edwin T. Booth, with whom he has been associated for many years.

▸ Stephen L. Nordlinger, who was formerly vice-president of Conti Products Corp., Brooklyn, N. Y., has been promoted to Colonel. He is stationed in China.

▸ Corporal George A. Suckley son of Mr. and Mrs. Chester L. Suckley of Tenafly, N. J., was recently awarded the Croix de Guerre. Corporal Suckley who served in the Sicilian invasion at Anzio beachhead, and Southern France, is attached to the Third Division of the Seventh Army. He is with the 441st antiaircraft unit. A graduate of Tenafly High School, he was with the Lowe Paper Company of Ridgefield, N. J., before entering the service in 1942. His father is on the editorial staff of the Journal of Commerce in the drug and chemical section.

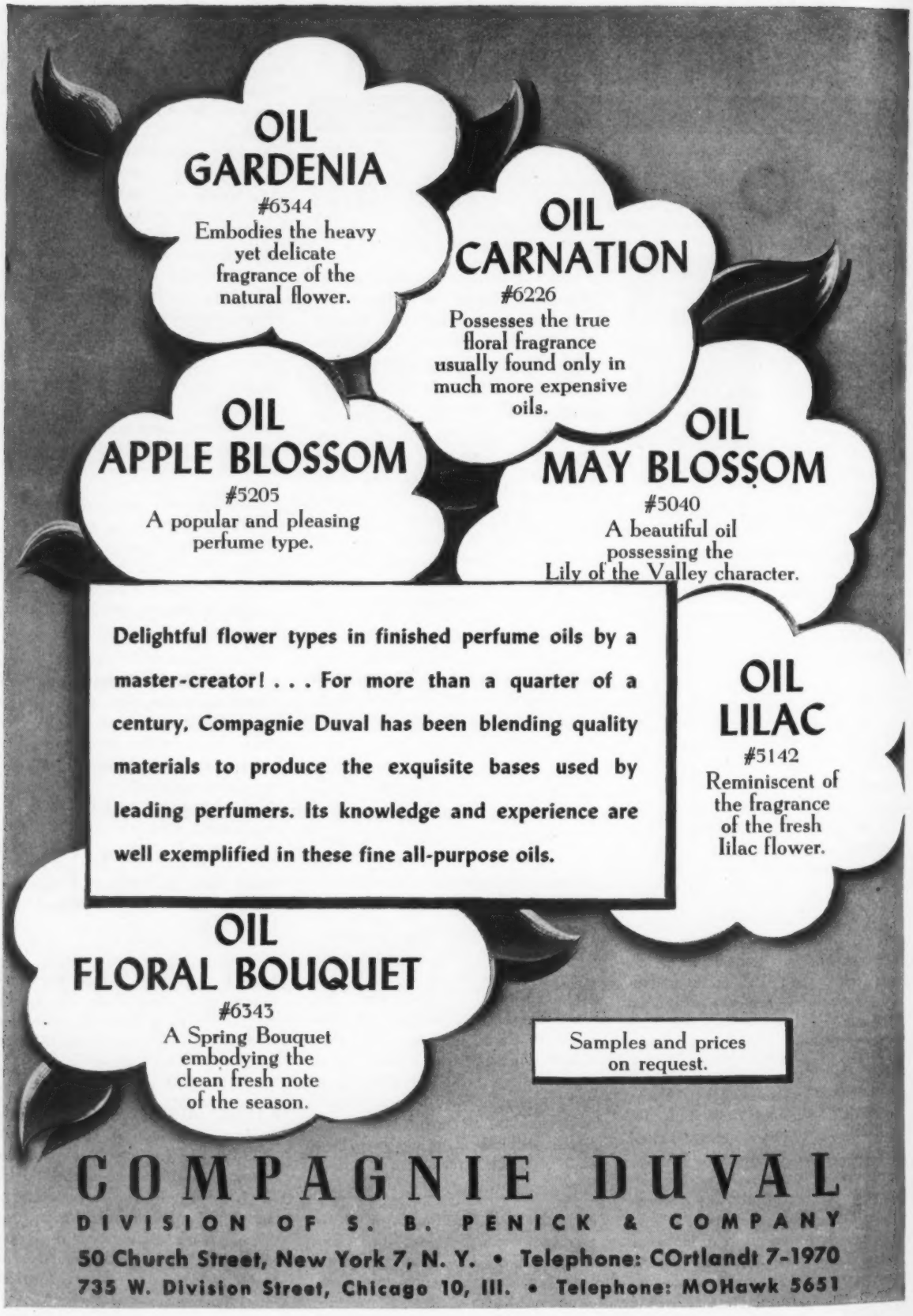
▸ W. T. Hopkins has joined Sales Affiliates, Inc., New York, N. Y. He is in charge of the hair coloring division, and as such will distribute Inecto, Loxol and Extra Shampoo Tint.

▸ Fernand Javal, who before coming to the United States was head of Houbigant in Paris, as well as acting as Mayor of Livry Sur Seine, has returned to France with his wife. He intends helping in the industrial reorganization of that country.

▸ William W. McQueen is now connected with the firm of Germaine Monteil Cosmetiques Corp., New York, N. Y., where he is doing laboratory experimental work, as well as factory organization. He was previously connected with Elizabeth Arden for 22 years, the past ten years being spent in South America, where he opened five factories in Buenos Aires, Rio de Janeiro, Santiago, Chile, Montevideo, Uruguay and Lima, Peru.

▸ A. F. Anderson joined the René Forster Co., New York, N. Y., on May 1. He was formerly associated with Naugatuck Aromatics Division of United States Rubber Co.

▸ Frank Macklin for many years western distributor at Toronto, Canada, for the J. R. Watkins Co. has retired. He has been succeeded by A. J. McVeigh who was manager since 1937 of the Montreal branch of the company. A. Lawson has succeeded Mr. McVeigh as manager at Montreal. He was formerly district sales manager.


OIL
GARDENIA
#6344
Embodies the heavy yet delicate fragrance of the natural flower.
OIL
CARNATION
#6226
Possesses the true floral fragrance usually found only in much more expensive oils.
OIL
APPLE BLOSSOM
#5205
A popular and pleasing perfume type.
OIL
MAY BLOSSOM
#5040
A beautiful oil possessing the Lily of the Valley character.
Delightful flower types in finished perfume oils by a master-creator! . . . For more than a quarter of a century, Compagnie Duval has been blending quality materials to produce the exquisite bases used by leading perfumers. Its knowledge and experience are well exemplified in these fine all-purpose oils.
OIL
LILAC
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Reminiscent of the fragrance of the fresh lilac flower.
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FLORAL BOUQUET
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A Spring Bouquet embodying the clean fresh note of the season.
Samples and prices on request.
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▸ David Gordon, recently chief engineer for the Interchemical Corp., has joined Foster D. Snell, Inc., Brooklyn, N. Y., as director of engineering. Over a period of more than 20 years Mr. Gordon has acquired a broad background of experience and responsibility. He will have complete responsibility for all engineering projects and serve as consulting engineer in his new association.

▸ Lt. Col. John E. Devine has returned to Standard Alcohol Co., New York, N. Y. He has been with the Chemical Warfare Service for the past four years. His position is now midwestern sales manager, with headquarters in Chicago, Ill.

▸ James Hill, Jr., president of Sterling Drug, Inc., New York, N. Y., has been appointed chairman of one of the eleven divisions in the Seventh War Loan drive.

▸ Dr. Edgar G. Thomssen who has been enjoying a business and pleasure trip in Florida since December 1, visited many of his friends in the trade in New York City early in May prior to leaving for his home in Winona, Minn. After leaving New York he stopped in Washington, St. Louis and Chicago.

▸ Samuel W. Hart has joined Richard Hudnut, New York, N. Y., as sales representative in Northern Alabama and Eastern Tennessee. For seventeen years he was a member of the sales staff of Yardley & Co., Ltd. Mr. Hart served for two and a half years in the Army, training infantry troops in a Replacement Training Center in Texas.

▸ V. W. Bohri has been appointed general manager of the Eastern branch of J. R. Watkins & Co. in Newark, N. J., succeeding H. S. Gensel who held that position for over 20 years.

▸ James J. Kerrigan and Henry W. Johnstone, both vice-presidents of Merck & Co. Inc., Rahway, N. J., were elected to the Board of Directors at the company's annual stockholder's meeting held on April 17. These elections represented additions to the Board, which formerly numbered nine members. All previous Board members were reelected.

▸ Benson Storfer, president of Parfums Corday, has left for France to reorganize the Corday factories in Surresnes, a procedure which will take several months. He was accompanied by Kathleen Mary Quinlan.

▸ William Malone, Jr., has been appointed advertising and sales promotion manager of Affiliated Products, Inc., New York, N. Y. Before his recent discharge from the Army, he was assistant to the vice-president of the Kolynos division of American Home Products Corp.

▸ Edward Bush, of Bush Aromatics, Inc., New York, N. Y., is the father of another daughter, born on March 12. The Bush family now numbers four children, three girls and one boy.

▸ Stell Ayleshire has joined Jeurelle, Inc., New York, N. Y., as advertising and promotion manager. She was formerly associated with Wesley Associates for six years where she worked on copy and promotion, and before that was with John Hudson Moore for six years, where she was in charge of packaging, promotion, advertising and publicity.

▸ Capt. Paul Joseph Lynch, son of Joseph Lynch of the Pacific Coast Borax Co., New York, N. Y., whose distinguished record was published in a previous issue of this journal was killed in action in Germany, March 25. He was 27 years of age.

▸ Dr. Charles Allen Thomas, director of the Central Research Laboratories of Monsanto Chemical Co., St. Louis, has been elected a vice-president. On September 1, he will become a member of the company's Executive Committee.

▸ William S. Finkensieper has been appointed technical director of Peek & Velsor Inc., New York, N. Y., following his return from service with the U. S. Navy.

▸ Suzanne Rudick has been appointed sales promotion director of Ogilvie Sisters, New York, N. Y. She replaces Claire Voorhees, who recently concluded a two year association with the firm.

▸ A. Lincoln Bender who has been associated with the beauty, barber supply and toilet preparations industry for over a quarter of a century has rejoined the staff of Beauty Culture, New York, N. Y.

▸ Hubert C. Sherk has joined John Hudson Moore, Inc., New York, N. Y., as controller.

▸ Charles B. Solly of Harley Soap Co., Philadelphia, Pa., recently underwent an eye operation. He had had impaired vision for a number of years.

▸ Stephen Nordlinger, who was formerly vice-president of Conti Products Corp., Brooklyn, N. Y., has been raised from the rank of Lt. Colonel. He has received the Legion of Merit Award.

▸ Dr. Walt Phillips has joined Van Dyk & Co., Belleville, N. J., as perfume chemist.

▸ A. Alan Rattiner has joined Henlan, Inc., Belleville, N. J., as general manager. He was formerly associated with Odell Co., Inc.

▸ Maxwell F. Bower was elected vice-president in charge of sales, at a recent meeting of the Board of Directors of Milkmaid, Inc., New York, N. Y. He has been associated with the company since it was organized in 1940, as sales manager. One of the main ingredients of the cosmetics which the company manufactures is milk.

▸ Frederick J. Trump has been appointed division manager of the drug and cosmetics division of Affiliated Retailers, Inc., New York, N. Y. Mr. Trump has a broad background in the drug and cosmetic industry, both in manufacturing and distribution fields. Until recently he was vice-president of G. Barr & Co., Chicago, in charge of sales and advertising.

LILAC 60

By Synfleur

An exceptional Lilac in
the low price field . . .
adapted for creams,
. . . extracts and . . .
. . . powders . . .

$6.00 per pound

Established **1889**

SYNFLEUR SCIENTIFIC LABORATORIES, INC.
REG. U. S. PAT. OFF.
MONTICELLO, N. Y.

New York
Atlanta
Detroit
Chicago

Havana
Mexico, D.F.
Buenos Aires
Rio de Janeiro

News and events

French Economic Mission to Buenos Aires

It is stated that a French economic mission is to leave shortly for Buenos Aires, to discuss the importation of Argentinean products. France has had a substantial credit outstanding in Argentina since the beginning of the war. It is expected that the resumption of trade will entail the exportation of luxury items, such as perfumes, cosmetics, fashions, etc.

Imported Cosmetics May Be Marked-Up

The office of Price Administration will permit a mark-up of 61 per cent on imported perfumes and cosmetics over cost. Mark-ups may be increased one-third if costs to retailers are not above those of March, 1943, retail cost for the same items.

Or-Blos Co. in New Quarters

The Or-Blos Co., Inc., has moved to 1526 Hendricks Ave., South Jackson 7, Fla. The company was formerly located at 336 East 10 St., Jacksonville, Fla.

Firmenich & Co. to Celebrate Two Anniversaries May 15

Firmenich & Co., New York, N. Y., will celebrate its ninth anniversary and the fiftieth anniversary of the founding of its associates, Firmenich et Cie (Chuit Naef) of Geneva, Switzerland, on the afternoon of May 15 with a reception to its customers and the trade at the Gramercy Park Hotel, New York. Rupert Watson who has been general manager of Firmenich & Co. since it was established, and his associates will welcome the guests.

Philadelphia College Announces Refresher Courses

The Philadelphia College of Pharmacy and Science, Philadelphia, Pa., has announced plans for providing its graduates and others now in service, with refresher courses to equip them to re-enter their profession.

Exchange Problem Crops Up in Latin American Countries

The exchange problem has popped up in Chile, as well as other Latin American countries. The Exchange Control in Chile has advised merchandisers down there that it will not supply dollar exchange unless cosmetics and toiletries products are shipped in bulk, which means, obviously, that packaging, labeling, branding and other identification of products for nationwide distribution will be done by Chilean sources with Chilean packages and labels under Chilean brands. The effort to secure the exchange on an unrestricted basis is reported to be under negotiation.

Goubaud of Paris Opens New Beauty Bar

Goubaud of Paris has opened its fourth Beauty Bar at 684 Madison Ave., New York, N. Y. It features its own products exclusively.

Caron Makes First Perfume Shipment to U. S.

In the April issue of THE AMERICAN PERFUMER a news item stated that a shipment of four cases of Caron perfume had been caught in Marseilles at the time France fell. Upon the liberation of the port the shipment was sent on its way.

We have since learned that the shipment originated in the Caron factory near Paris. It marked the resumption of routine importation of Caron perfumes by Caron Corp., the American agent of the French House of Caron.

Since the consular invoice bears visa No. 1 of the American Embassy, under the date February 7, Caron gets the credit of being the first French perfumer to ship to the U. S.

Serge Lakhovsky in New Quarters

Serge J. Lakhovsky moved on May 1 to new quarters located at 109-111 Broad St., New York, N. Y. At his new location his organization occupies the entire eighth floor.

Parfums Hartnell and Parfums Adrian in Attractive New Quarters

The formal opening of the attractive new showrooms and headquarters of Parfums Hartnell and Parfums Adrian at 11 W. 57th St., New York, N. Y., took place April 17 when a reception was tendered to the trade. W. J. Overhamm, distributor, and Mrs. Overhamm and members of the staff greeted the guests.

America's No. 1 Choice Because It's 5 WAYS BETTER

MALMSTROM NIMCO BRAND LANOLIN

WHAT SINGLE INGREDIENT has magical consumer appeal? You'll find the answer waiting for you in the corner drug stores of America. Preference for products enriched with LANOLIN is overwhelming!

In the words of a neighborhood druggist, "We recommend as more beneficial the toiletry that contains lanolin. Customers accept it more readily, and some even *ask* for a product that contains lanolin."

The cue for post-war profits is clear! Start experimenting with Malmstrom's Nimco Brand Lanolin today. Yours for the asking are testing samples — and the know-how that has made Malmstrom "America's Largest Supplier of Lanolin."

N. I. MALMSTROM & CO.

America's Largest Suppliers of { **LANOLIN** • Anhydrous U.S.P. • Hydrous U.S.P. • Absorption Base • Technical
DEGRAS • Neutral and Common • Wool Greases

147 LOMBARDY STREET • BROOKLYN, NEW YORK

OPA Permits Soap Price Adjustments

The Office of Price Administration has amended MPR-391 to permit adjustments on prices of household soaps and cleansers where labor and material costs have increased to the point where manufacturers are entitled to an adjustment, and if the curtailment of his production would force consumers to purchase supplies at a higher cost.

Complete information covering the years 1936 to 1939 inclusive must be submitted for an adjustment.

Norman Dahl accepting the Charles S. Welch Award for outstanding packaging in 1944 in the name of Prince Matchabelli. Eileen Welch makes the presentation; Herman Brooks looks on.

Talc Production Not Meeting Demand

At a recent meeting of the Talc Industry Advisory Committee it was revealed that talc consumption for 1945 is expected to be 340,000 tons, an increase of 20,000 tons over 1944. The 1944 consumption was 20,000 tons over the preceding year. Production in 1944 amounted to about 320,000 tons.

The increase is due to a broadening in the number of uses.

"Name the Swan" Contest Winner Announced

Jean Dawson, of Cleveland Heights, Ohio, has been named the winner of the "Name the Swan" contest sponsored by Lever Brothers, Cambridge, Mass. As such she has her choice of receiving $20,000 in cash, or $100 a month for life. Almost a million others entered the contest. The completion of the slogan "I like Swan Soap better because . . .", is being built into an advertising program.

American Legion Placing Foreign Representatives

Many members of Paris Post No. 1, of the American Legion, now residing in this country wish to return to France, Belgium or Italy as soon as possible. They are seeking employment with American firms in varied fields of activity.

Many of them have lived in these countries many years, and speak, read and write the language fluently, and are conversant with conditions. The Post has established files giving a resume of each available man or woman who plans to return. Information may be obtained from Paris Post No. 1, 127 Sherman Place, Jersey City 7, N. J.

Standard Synthetics Expands Sales Territory

Standard Synthetics, Inc., New York, N. Y., has expanded its sales territory to include areas in Iowa and Indiana. Edward Sinclair, manager of the Chicago office, and Ralph Crow, sales manager, will cover the new territory.

EXCLUSIVE WITH HOPKINS

FACTOLAC
For Perfect Emulsions of Fixed and Volatile Oils
Assures complete, homogeneous mixtures without trituration or special apparatus. Produces PERMANENT, creamy-smooth emulsions. Saves money, time and trouble . . . Write for formulas.

GUMS Whole or Milled to any degree of fineness
PROFESSIONAL GRADES
Gum Arabic
Gum Tragacanth
Gum Karaya
We handle only the best professionally milled, pharmaceutical grades. If you require purity, solubility and viscosity, ask us for samples and quotations.

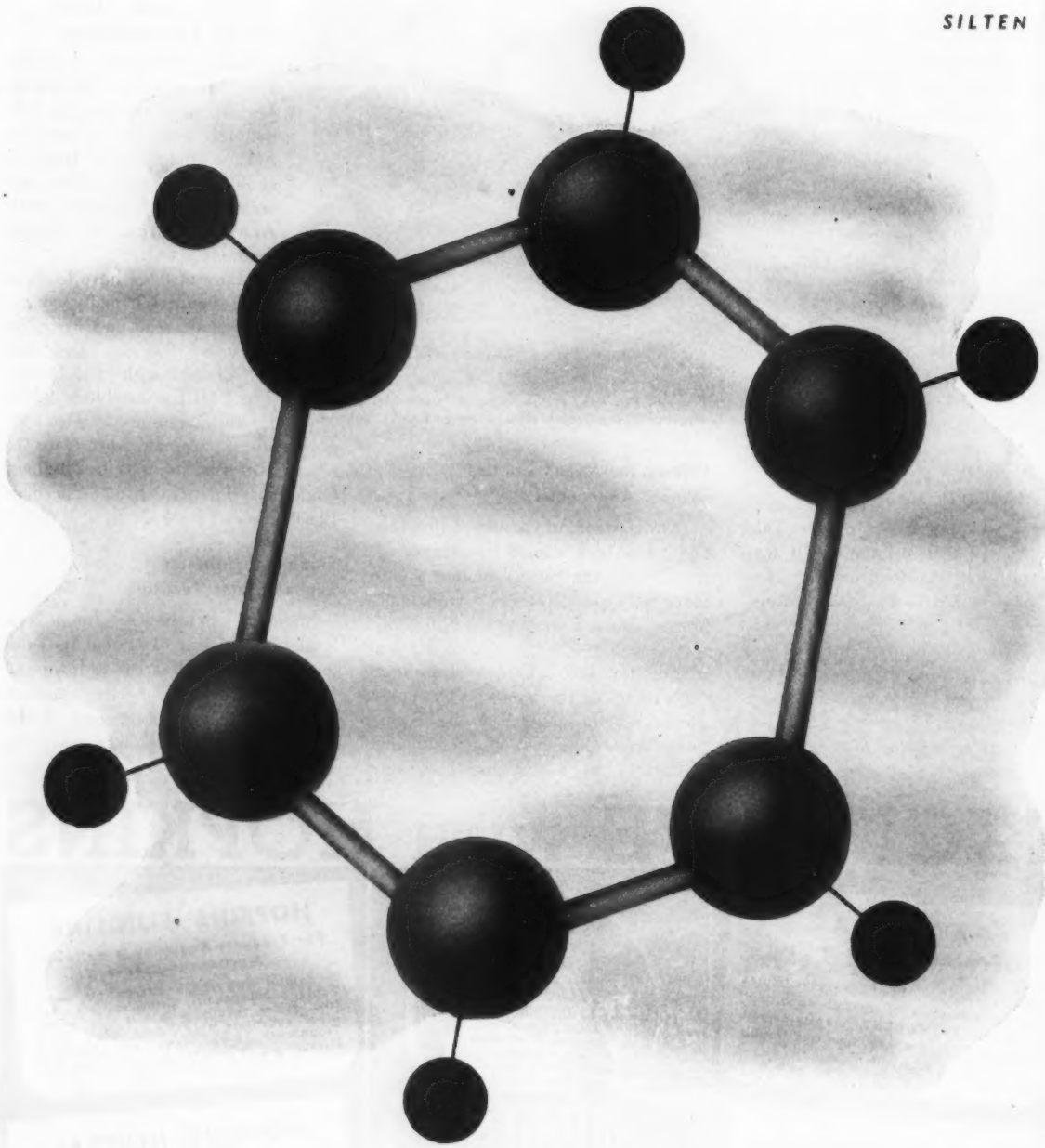
"Quality is remembered long after price is forgotten"

HOPKINS' FIJIOLINE
For Products Requiring a Reliable Mucilagenous Base
A natural vegetable compound, semi-liquid, mucilagenous, almost entirely odorless. Mixes readily with oils and water. Ideal substitute for Quince Seed, Gum Tragacanth, Irish Moss, and Flaxseed bases.

HOPKINS' NEUTRAL POWDERED WHITE SOAP
Extensively copied, never duplicated. Combines extreme whiteness with wholly neutral taste, low moisture content, very low residue of alcohol, water and sodium carbonate, resistance to varying temperatures, good meshing quality and non-hardening, non-rancid properties.

BASIC INGREDIENTS OF TOP QUALITY
FOR TOILETRIES • COSMETICS • PROPRIETARIES
Full information, samples and quotations on request.
Please indicate uses intended so that we may offer our best suggestions.

J. L. HOPKINS & CO. • 220 BROADWAY, NEW YORK 7, N. Y.



Iso Bergamone

the *scientifically* developed synthetic Bergamot oil

POLAK & SCHWARZ INC. 667 WASHINGTON ST., NEW YORK, N. Y.

Fair Trade Council Appoints Executive Vice-President

The directors of American Fair Trade Council have appointed Dr. Gary Leslie as executive vice-president in charge of the activities of the organization. Fair trade laws are now on the statute books of forty-five States.

Luxury Tax in Quebec

The perfumery trade in the province of Quebec, Canada, will have to bear part of the burden of a six per cent "luxury" tax imposed by the Quebec Provincial Government, which went into effect April 27. Among the articles on which the tax is levied are perfumes, perfume atomizers, cosmetics, lotions, toilet creams, and other toilet preparations and articles, except soap. The tax replaces a two per cent sales tax.

Dinan and Branham with American Products Co.

E. F. Dinan has been elected vice-president in charge of sales, and Charles A. Branham advertising and sales promotion manager, of The American Products Co., Cincinnati, O., and not of the American Home Products Co., as was previously reported.

Talc Is Placed on Preference Rating Basis

WPB is concerned over the supply of talc for camouflage paint and other war uses, and has put it on a preference rating basis. This control does not, however, affect the cosmetic and toiletries industry. The talc used is not taken from the sources which supply the material to the industry.

Fibre Shipping Container Restriction

Inventory restrictions on fibre shipping containers have been amended through Limitation Order L-317. The order changes inventory restrictions. A user may determine which of two classes of inventories he may prefer, but will not be permitted to change his decision during the calendar year.

Inventories are limited to either 1½ carloads or a 30-day supply.

Syntomatic Corp. Appoints Clifford L. Iorns Representative

Syntomatic Corp., New York, N. Y., has announced the appointment of The Clifford L. Iorns Co., St. Louis, Mo., to represent it in the St. Louis and adjacent territories. Victor L. Roberson, who is head of the Iorns Co., looks after the sales contacts of the company. He is well known in the trade, and is a member of long standing in the field of raw materials for the cosmetic, soap and food industries.

Victor L. Roberson

Golden Wedding Anniversary for Mr. & Mrs. F. Weber

Mr. and Mrs. Ferdinand Weber celebrated their golden wedding anniversary on April 17. He is senior vice-president and treasurer of George Lueders & Co., New York, N. Y.

YOU CAN DEPEND NOW AS ALWAYS ON SHERWOOD'S CONSISTENTLY HIGH QUALITY AND PERSONALIZED ATTENTION

white oils

petrolatums

ceresines, white and yellow

SHERWOOD REFINING COMPANY, INC.

THE REFINERY OF CONTROLLED SPECIALIZATION

ENGLEWOOD, N. J. Refinery: — WARREN, PA.

Bristol-Myers Co. Announces Earnings

The tentative consolidated income of Bristol-Myers Co., New York, N. Y., was $885,981 for the three months ending March 31. This is equivalent to $1.33 per share. These earnings are after all charges, reserves, and provisions of $1,644,097 for income and excess profits taxes are taken into account.

Cellophane Use Restricted

Limitation Order L-20 prohibits the use of cellophane for wrapping cosmetics, soaps and deodorants, except for military use. Cellophane may be used to replace metal for collapsible tubes for tooth paste. Waste material is excepted from this order.

Edward Remus & Co., Accepting Orders on Imports

Edward Remus & Co., New York, N. Y., has concluded arrangements for the direct importation of French and Spanish oils. Orders are being accepted for April/May delivery of French lavender 40/42 per cent, French lavandin, chau; moogra, thyme, geranium bourbon, cade, and other oils.

New Advertising Manager for Richard Hudnut

Donald L. Byrant was appointed advertising manager of Richard Hudnut, New York, N. Y., on May 1. After a number of years in the agency business, he joined Newspaper Group, Inc., a subsidiary of Publications Corp., in 1935, and subsequently became its president. When Newspaper Group was liquidated in 1942, its group operations were merged with the Metropolitan Group. At that time Mr. Bryant moved to the parent company and was placed in charge of advertising and sales promotion for its Alko-Gravure division.

Primrose House in New Quarters

Primrose House, Inc., has moved to new quarters, located at 724 Fifth Ave., New York, N. Y.

Agents for Foreign and Domestic Shippers

Crawford, Callan & Co. has been organized in New York, N. Y., by Frank E. Crawford, George Simon and William Callan as a general partnership to act as agents, representatives and commission merchants for foreign and domestic shippers and manufacturers.

O. D. Royer Represents Remus on West Coast

O. D. Royer Co., 1340 East 6 St., Los Angeles, Calif., has been appointed to represent Edward Remus & Co., Inc., New York, N. Y.

Glucose Basingpoint System Held a Violation

The United States Supreme Court held that the practice of using a basingpoint system in pricing glucose was a violation of the Robinson-Patman Act provisions of the Clayton Act, on April 23. The decisions were against the Corn Products Refining Co., and the A. E. Staley Manufacturing Co.

For Best Results, use

Northwestern
FERMENTATION
BUTYRIC ACID

THE LARGEST MAKERS OF BUTYRIC ETHER IN THE WORLD

THE NORTHWESTERN CHEMICAL CO.
INCORPORATED 1882 **WAUWATOSA, WISCONSIN**

ADVERTISEMENT—*This entire page is a paid advertisement.* *Prepared Monthly by U. S. Industrial Chemicals, Inc.*

U.S.I. CHEMICAL NEWS

May ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1945

SO_2 Household Fumigant Prepared with Acetone

In spite of its many desirable qualities as an insecticidal fumigant, sulfur dioxide has always been hard to handle because it is a gas at ordinary room temperatures. Mixed with acetone, sulfur dioxide becomes a definite liquid compound, whose vapor pressure is sufficiently low to allow it to be packaged in ordinary tin containers. Furthermore, a mixture of 1 part acetone with 1.9 parts sulfur dioxide, by volume, is non-inflammable in all concentrations in air. This liquid is stable while confined, but upon exposure to air decomposes and becomes progressively volatile.

In tests, the liquid was absorbed in diatomaceous earth pellets, and a quantity of these pellets was exposed in a room containing the test insects. The compound, when evaporated into the air, was lethal to the insects, which included bedbugs, flour beetles and carpet beetles. Treatment was harmless to wallpaper, white and colored fabrics, painted surfaces and metals.

Apparently the acetone-sulfur dioxide compound holds possibilities as a commercial fumigant, and will bear further investigation.

How to Make 2 = 3

This year, Washington reports, there will be *only two* War Loan drives, not three. But the total need is no less. For the Battle of Japan has just begun — and it's going to be a lot tougher and longer than many of us expect. So — let's stretch 2 into 3 by buying *bigger extra bonds* in this, America's Big Seventh War Loan drive.

Thermal Conductivity of Normal Alcohols

Recent studies at an eastern university have determined several new figures for the thermal conductivity of normal alcohols at 30 C. They are as follows:

Alcohol	*New figures*	*Others*
Methyl	0.00050	0.000503
Ethyl	0.00041	0.000433
n-Propyl	0.000380	0.000409
n-Butyl	0.000365	0.000400
n-Amyl	0.000365	0.000388

Pharmaceutical Lactones Yielded by New Process

Structurally complicated lactones, such as the cardiac poisons of the digitalis, strophanthus and squill series, may be prepared from easily-available products by a process discovered by a Swiss scientist. Basically, the process comprises condensing saturated or unsaturated lactones which are substituted by halogen with carbonyl compound. The condensing agents suggested include metallic alcoholates such as sodium ethoxide. Ether, acetone or both also enter into each of the four processes given as examples.

New U. S. I. Liquid Insulation Has Wide Range of Uses

Product Exhibits Remarkable Ability to Protect Electrical Systems from Moisture, Wet Weather and Many Acids

A unique insulating material which has won wide acceptance as a protector of electrical systems in automotive and amphibious combat equipment has been added to the list of products of U. S. Industrial Chemicals, Inc., according to a recent announcement. While the new product, trade-named PiB Liquid Insulation, will make an ideal companion product for the company's Super-Pyro Anti-Freeze in the automotive field, the company expects extensive expansion of PiB's market in the farm, marine and industrial fields.

This motor was removed from an oil burner in a flooded cellar where it had been "drowned out". PiB was sprayed into the motor and in a matter of minutes the motor was running smoothly. To test the "staying power" of PiB, the motor was then submerged in soapy water, where it has been running, intermittently, for two years without a hitch.

Long-Lasting Protection

The new product is described as a liquid with powerful penetrating action and high resistance to the action of water, ordinary acids, oils and greases. Its viscosity is low enough so that it flows freely into hard to-get-at nooks and crannies and can be easily applied by brush or spray. Good water-repellent properties coupled with a strong "wetting" action enable PiB to undermine and displace water which may be present in the wiring system or on insulating surfaces. PiB has a dielectric strength of 4000 volts per mil; its protective qualities, under normal conditions, last for a minimum of six months.

War-Tested

Ignition systems on amphibious combat equipment are subjected to the severest kind of conditions. Salt spray and soggy climates all tend to break down insulation and cause corrosion. The most important current use of PiB is in protecting the ignition systems of American amphibious war machinery.

PiB is winning increasing popularity among operators of buses, trucks and passenger cars. It is used to waterproof ignition systems, to prevent corrosion and current losses in batteries, to re-insulate cracked and dried-out wiring. In the marine and farm fields, PiB is seen to have a particularly bright future. From yacht to modest outboard, marine equipment of every type will benefit from the protection PiB affords against starting failures and the ravages of salt air. Farm equipment that must stand up under hard usage and

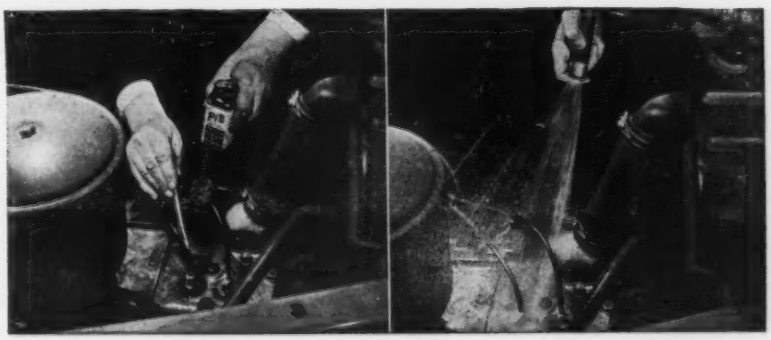
(*Continued on next page*)

New British Insecticide Exhibits High Potency

Efforts of a British concern to find an easily synthesizable replacement for scarce and costly derris have resulted in the development of a new insecticide which they report to be five times as potent as D D T.

The new substance is benzene hexachloride, briefly identified as "666" because of its formula $C_6H_6Cl_6$. Tests revealed that the gamma-isomer, present in the crude material in concentrations of from 10 to 12 per cent, was more toxic to weevils than any substance that this concern had ever tested. On the other hand, the alpha- and beta-isomers are virtually non-toxic.

If laboratory results are duplicated in commercial applications, new insecticide formulas will undergo drastic revisions.



Just brush or spray PiB Liquid Insulation on the plugs, wiring, distributor, coil terminals and battery of a water-stalled engine. Step on the starter and you're ready to roll! You can literally "hose down" an engine that has been properly treated with PiB and it won't even miss.

ADVERTISEMENT—*This entire page is a paid advertisement.*

May ★ **U.S.I. CHEMICAL NEWS** ★ 1945

Patent Granted on All-Purpose Insectifuge

As previously described in Chemical News, a government-developed all-purpose insect repellent is doing a remarkable war job in protecting our fighting forces against the variety of insects they encounter on different parts of the globe. One of the vital ingredients of this repellent is U.S.I.'s Indalone.

Recently, a patent has been assigned to the United States, as represented by the Secretary of Agriculture, covering the composition of the product. The patent describes it as a ternary solution comprising by volume from 33⅓ per cent to 80 per cent of dimethyl phthalate, and complementary equal parts of 2-ethyl-1, 3 hexanediol and n-butyl mesityl oxide oxalate. (Indalone).

Bitter Soya Taste Yields to Alcohol

The bitter, beany flavor of present-day soya flour has seriously limited the use of this mineral- and protein-rich flour in bakery products. A new alcohol process for extracting the soya-bean oil, however, gives promise of overcoming this handicap. According to a recent report, the new process leaves a sweet-eating bean for grinding into a flour which can be used in greater proportions for enriching bakery products.

Urethan May Play New Bactericidal Role

Experiments with urethan and other carbamates, such as butyl and prophyl, indicate that these compounds, when combined with sulfonamides, have unexploited possibilities as bactericidals and bacteriostatics, according to a recent report.

Indications are that, in addition, urea and urethane both antagonize slightly the sulfonamide inhibitors and that they increase the solubility and bacteriostatic activity of the sulfonamides. Both are effective mainly against Gram positive bacteria and to a lesser degree against Gram negative bacteria.

Tests indicate that urethan is superior to urea in all respects.

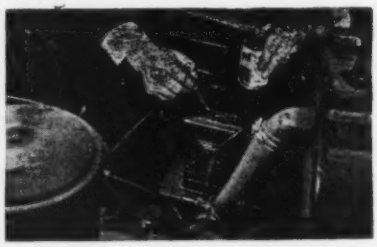
New Liquid Insulation

(Continued from preceding page)

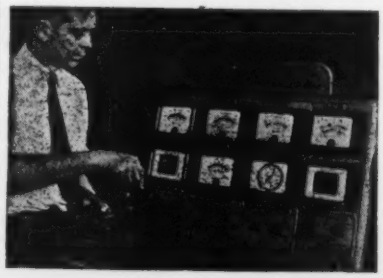
exposure to weather also will give longer, more reliable service.

Industrial Uses

In industry, PiB appears to have limitless possibilities. Motors which operate in damp atmospheres can be protected simply by spraying with PiB. Open switchboards, control panels, automatic signaling systems and similar electric equipment can likewise be protected with PiB. The emergency uses of PiB—in treating drowned-out motors, leaking panel boards and other moisture-affected electrical equipment—should make it a "tool" every maintenance man will want to have in his kit.



Above, you see PiB being applied to a battery. Photo below shows test to determine current leakage. New battery shows no leakage. Used battery, prior to treatment with PiB, showed sufficient leakage to cause electrolysis and consequent corrosion of battery holders, cables and terminals. Same battery *after* PiB treatment showed no measurable leakage. It is estimated that periodic treatment with PiB can add 10 per cent to the life of a battery. However, PiB's biggest contribution to battery life is made indirectly — by assuring quick starting of motors even after long idleness in damp weather.



TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

A new plastic material, which is claimed to transmit as much visible light as window glass, yet block all harmful ultra-violet radiation, is now on the market. **(No. 931)**

USI

A transparent new fabric is described as being as sheer as voile, but with exceptional strength and wind and water resistance. It is available for development work. Suggested uses include rain-proof garments, shower curtains, etc. **(No. 932)**

USI

Grease-proof cellophane packaging is offered in the form of a new cellophane-cloth-wax laminate, which is specially recommended for wrapping of grease-coated metal parts. **(No. 933)**

USI

A cleaner for plastic glass, such as plexiglass, is offered for sale in bulk at a new low price. It is applied by a new sprayer which is said to speed cleaning and improve results. **(No. 934)**

USI

A new chlorinated paraffin, resinous in nature, is claimed to be both flame and moisture resistant, and to be non-toxic. **(No. 935)**

USI

Corrosion proofing of metal surfaces is said to be facilitated by a new wax concentrate sold in solution with petroleum solvents. The liquid, which may be applied by brush, dipping or spray, dries in an hour, remains flexible at minus 20 F., and will stand heat up to 214 F. **(No. 936)**

USI

A new synthetic-rubber latex, reported to be a modified type of butadiene-styrene, is announced. Suggested postwar uses include impregnation of paper and fabrics used in shoes and binding of fibres and hair for upholstery. **(No. 937)**

USI

An abrasion-resistant plastic, said to be 250 times as resistant to abrasion as boiler plate, is offered. It is claimed to be useful for such tough jobs as protecting sand-blast equipment. **(No. 938)**

USI

An alternate for Carnauba wax, which is said to take its place in paste floor polishes, automobile polishes, carbon paper and water-wax emulsions, is on the market. **(No. 939)**

USI

Heat-indicating bands, used as bottle seals, are designed to give warning when the bottle has been subjected to a temperature harmful to the contents. Under these conditions, the color of the band changes permanently from green to bright orange. **(No. 940)**

USI

A new enamel-like paint, for use on concrete, brick or wood exposed to water or moisture, is offered. Maker states that new paint affords better coverage than its predecessor and is resistant to yellowing and the action of corrosive fumes. **(No. 941)**

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OTHER PRODUCTS

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John Beach Returns from South American Trip

John H. Beach, vice-president of Seeley & Co., Inc., New York, N. Y., left this country on January 28 on a business trip to South America. He was accompanied by William H. Stickney, who represents Seeley & Co. in Brazil on its line of products.

Mr. Stickney was in New York conferring on the company's future plans for its South American business. Mr. Stickney, an American by birth, has lived in Brazil for many years, and is thoroughly familiar with the background and needs of the various industries that represent the market for Seeley's products in that country.

Mr. Beach returned direct to this country. He had originally planned on visiting Mexico and Guatemala, but was forced to alter these plans.

During his absence the New York headquarters was under the direction of T. Harry Garlick, sales manager.

Mr. Beach left New York again on April 2 for a trip to California. Enroute he stopped off in St. Louis, Mo., to attend the executive committee meeting of the Flavoring Extract Manufacturers' Assn., which was held April 5.

While in California he visited both Los Angeles and San Francisco. He returned to New York on April 25.

G. E. Esperson Returning to Paris

G. E. Esperson, general manager of Richard Hudnut, S. A., is returning to assume his old duties in France at an early date.

He left France when that country fell before the Germans, on the S. S. Washington, the last U. S. ship to sail.

He has received reports that both the company factory at Suresnes, and the shop on rue de la Paix, have escaped damage, and that both continued to function under German occupation.

Friendly Tip Co. In New Location

The Friendly Tip Co., manufacturers of Sta-Sweet deodorant, has moved to 2413 Indiana Ave., Chicago 16, Ill.

Dr. David Salten Speaks at Columbia University

In accordance with his policy of inviting experts in the field as guest lecturers for his course on perfumes and perfume materials, Professor Curt Wimmer obtained the services of Dr. David G. Salten who spoke on "Ten Indispensable Synthetic Aromatic Chemicals" at the Columbia University College of Pharmacy, on April 30.

Dr. Salten is chief chemist of the House of Imperiale Russe, New York, N. Y., manufacturers of Essence Imperiale Russe, and Ivar men's preparations. He is in charge of research and product development, and control of raw materials and finished products.

Soap Fat Quotas Reduced Again

Retroactive to April 1, civilian soap fat quotas have been reduced by an amendment to War Food Order No. 42b. The new percentages permitted are: Package and bar soap 74 per cent, and bulk package soap 84 per cent.

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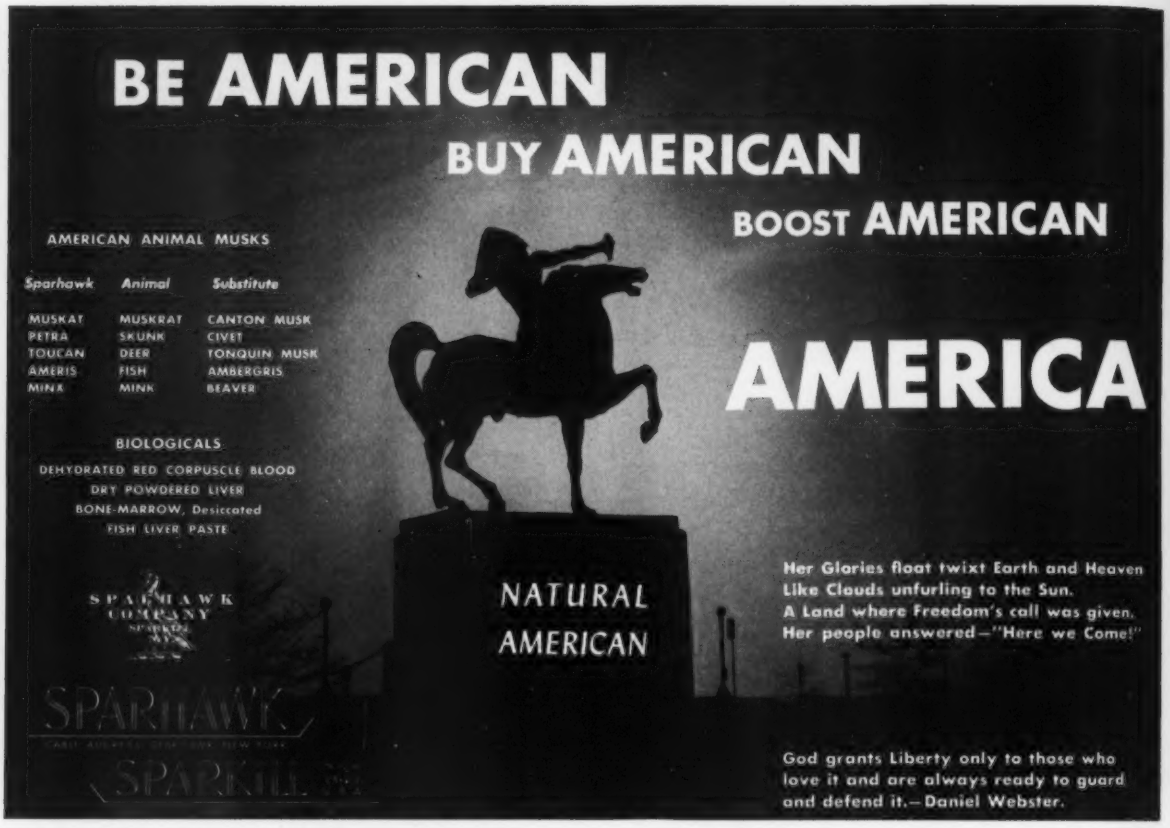

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SHAMPOOS: Isopropyl Alcohol aids in cleaning hair and scalp thoroughly and in leaving hair soft and lustrous.

HAIR AND SCALP PREPARATIONS: Isopropyl Alcohol as a vehicle for hair and scalp preparations aids the cleansing and antiseptic value of the tonics.

STERILIZING SOLUTIONS: 40% Isopropyl Alcohol will kill dried Bacillus Coli in 1/4 minute. 50% Isopropyl Alcohol is equivalent to 70% ethyl alcohol for killing Bacillus streptococcus and staphylococcus.

BODY RUBS: Isopropyl Alcohol evaporates slowly, thereby prolonging the cooling effect when used in body rubs. Isopropyl Alcohol has no denaturants.

FACE AND HAND LOTIONS: Isopropyl Alcohol evaporates slowly; has little tendency to dry the skin, and aids in keeping the skin soft.

AFTER SHAVE LOTION: Isopropyl Alcohol is excellent for this product because it aids the after-cooling and skin-freshening qualities of the lotion.

Use 91% Isopropyl Alcohol and Release War Materials

STANDARD ALCOHOL COMPANY

26 BROADWAY NEW YORK 4, N. Y.

Allied Drug & Cosmetic Assn. Golf Dates

The Allied Drug and Cosmetic Association of Michigan has announced plans for the 1945 golf season. All games will be played at the Birmingham Country Club, on Tuesdays. The dates are as follows: April 24, May 29, June 26, July 31, August 28, Sept. 25, and Oct. 23.

Members of the various associations, who happen to be in Detroit on these particular dates are invited to attend.

Mentholene Accepted Alcohol Denaturant

The Bureau of Internal Revenue has announced that mentholene may be used in place of menthol in denaturing alcohol.

Soap Production in First Quarter Above Same Period in 1944

Soap produced during the first three months of the year was above that made during the same period in 1944, but showed a decrease from the final quarter of last year. Deliveries of all kinds of soap, other than liquid, amounted to 812 million pounds. Deliveries of liquid soap amounted to 1155 thousand gallons. Dollar value amounted to $110,000,000 on the former type, and $1,300,000 on the latter type of soap. The figures are from the reports of 71 manufacturers who do about 90 per cent of the soap business in this country.

Bristol-Myers Establishes Research Project

Bristol-Myers Co., Hillside, N. J., has announced the establishment of a project at Southern Research Institute for investigations in the field of organoleptic substances.

It is expected that synthetics will act as supplements for blending with products of natural origin in the manufacture of flavoring and perfume ingredients.

Skol Products Gives Party to the Trade

Skol Products Co. Inc., Mt. Kisco, N. Y., gave an elaborate party to the trade through its advertising agency, J. Walter Thompson Co., on April 25.

Sterling Drug Buys Winthrop Stock

Sterling Drug Inc., New York, N. Y., purchased the Class B Common Stock of Winthrop Chemical Co., with a successful bid of $9,500,000, paid in cash, on April 23.

The purchase brings full control to Sterling Drug, Inc., as it has always owned the Class A Common Stock.

W. J. Overhamm on Trip to West Coast

W. J. Overhamm, of Parfums Hartnell, New York, N. Y., is on a three week combined business and pleasure trip to the West Coast.

Further Cuts in Sugar and Fats Expected

The House Food Investigating Committee has opened public hearings which disclose the fact that civilian sugar supplies are expected to be from 35 to 40 per cent below those of 1944 in the third and fourth quarters of this year. The same source disclosed that fats will be "terribly tight" during the same period.

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Toilet Water • Cologne • Perfume

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Novelty base giving a sweet, flowery lift to compositions, at the same time is very lasting. Excellent base for modern odors; does not discolor.

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(ABSORPTION BASE)

Available at present in limited quantities. Those who have never used this excellent base should try out small lots so as to be ready when larger quantities are available. In many instances an extender for lanolin—in some a replacement.

PRICES

5 lbs.	@	.63	per lb.
10 lbs.	@	.60	" "
25 lbs.	@	.56	" "
50 lbs.	@	.55	" "

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Richmond-Phillips a New Company

Harry Richmond and Tom Phillips, both of whom were formerly associated with Jean Vivaudou Co., have started the Richmond-Phillips Co. in New York, N. Y. The new company distributes sachets and toiletries.

Copra Company Set Up in Philippines

The importation of copra and coconut oil from the Philippines will be facilitated by the newly formed Copra Export Management Company, which has been formed for that purpose. It is to be the agent for the U. S. Commercial Company. Imports will be allocated.

President Asks Government Personnel to Stay on the Job

The exodus from Government jobs threatened to become so general that the President issued an appeal addressed to War Mobilization Director Vinson in which he asked men and women from industry to stay on the job if there was a reason for the job they are doing. The President pointed out that the finish of the war with Japan would be almost as much of an effort as the two-front war has been hitherto. He made clear that the work on the homefront is just as important as it is on any other front, and he intimated that by one means or another the hegira of men from business and industry from Government to private life must be halted.

Synthetic Organic Detergents Allocated

Critical synthetic organic detergents have been placed under General Allocation Order M-300, as Appendix B materials. The allocation period is the calendar month. Small order exemption is 100 pounds. Only producers are now required to file applications for allocations with WPB.

Harriet Hubbard Ayer Party

On May 8, Harriet Hubbard Ayer, Inc., New York, N. Y., gave a party for the trade. It was for the purpose of presenting new packages of a firm product, which will be announced at a later date.

Charles T. Porter Appointed Manager of Sperti, Inc.

Charles T. Porter has been appointed manager of the cosmetic division of Sperti, Inc., Cincinnati, Ohio.

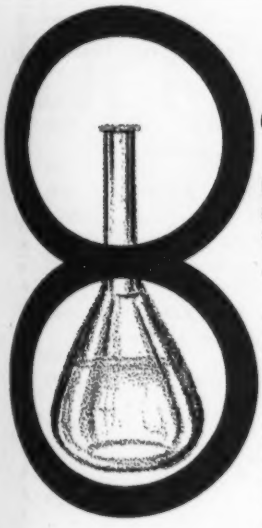
Acetone and Diacetone Placed Under New Order

Acetone and diacetone have been placed under general allocation order M-300. They were formerly under M-352.

The allocation period is the calendar month. The small order exemption is 350 pounds of acetone and 415 pounds of diacetone.

Dana Perfumes Completes Sales Organization

Waldo V. Lossow, director of sales for Dana Perfumes, Inc., Chicago, Ill., announces the completion of his sales organization. Gene Mullica is in charge of Pacific Coast operations; M. H. Russell is in charge of the midwest territory; and Tom Nolan will direct Dana sales in New York, N. Y. Other appointments are Donald L. Hopcraft, Fred C. Smith, John Van Leer, Dan F. Regal and Gordon Yates.



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1 Backed by the longest commercial Stearate manufacturing experience in America . . M. W Parsons offer you this new product as the finest Zinc Stearate that can be made.

2 Years of research have made possible a particularly white product

3. Special production methods . . . developed over more than a quarter of a century . have made it ODORLESS

4 It will not develop offensive odors even if kept for a long period

5. It enables your face powder to retain the same odor that you give it.

6. A smooth, light, fluffy texture has been finally and definitely achieved.

7 Tested independently it shows the following results: ARSENIC (Gutzeit and Spectrographic Test) . . Not Found. LEAD (Spectrographic Determination) . . . 1.7 parts per million.

8. The reputation and record of M. W. Parsons assure you of Uniformity in all shipments.

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American Soap Maker's Guide (Meerbott & Stanislaus)	$7.50
Chemical Formulary (Bennett) Vol. VII	6.00
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How to Make and Use a Small Chemical Laboratory (Raymond Francis Yates)	1.00
Modern Cosmeticology (Ralph G. Harry)	5.00
National Formulary, VII	6.25
Non-Intoxicants (Nowak)	6.00
The Spice Handbook (J. W. Parry)	6.50
Plastics (J. H. DuBois)	3.75
Practical Emulsions (H. Bennett)	5.00
Practical Flavoring Extract Maker (Kessler) water damaged	2.00
Principles and Practice of Beauty Culture (Florence E. Wall)	6.00
Substitutes (Bennett)	4.00
Theory of Emulsions and Their Technical Treatment (William Clayton) 4th Ed.	10.00
Henley's Twentieth Century Book of Recipes, Formulas and Processes	4.00
U. S. Dispensatory XXIII	15.00
U. S. Pharmacopoeia, XII	7.75

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Inedible Tallow and Grease Order Amended

War Food Order 67 has been amended so that "preferred use" orders must be filled first. "Preferred use means the use of inedible tallow and grease in the manufacture of stearine, or in the manufacture of any other product except the following: (i) soap; (ii) inedible tallow or grease of a particular type or grade."

Inventories are limited to one third of base period use. The base period is the last six months of 1944. A manufacturer may accept delivery of one maximum unit if his inventory does not exceed one sixth of his base period use. A maximum unit is the largest single delivery accepted by him during the base period.

Bristol Myers Opens New Branch Offices

Lee Bristol, J. P. Hardie and George McMillan have participated in the opening of new branch offices and warehouses in Dallas and Chicago. In both cities, sales representatives, branch managers, and members of the retail and wholesale trade were entertained. The address of the Dallas branch office and warehouse, of which Dayton Riordan is manager, is 3020 Canton Street. The new office in Chicago is located at 444 Lake Shore Drive, and the warehouse is located at 509 East Illinois Street. R. N. Hill is branch manager.

Contract Termination Regulation Revised

Radical revisions, which will become effective May 20, have been made in the Joint Army-Navy Termination Regulations. A 405-page form has been issued covering the amendment, and is available to war contractors and sub-contractors.

Agencies Given Priority in Purchase of Surplus Property

Through SPB Regulation 2, the Surplus Property Board has issued a regulation requiring that Federal agencies and State and local governments be given priorities by disposal agencies in the purchase of surplus property. May 25 is the date when this regulation becomes effective.

McKesson & Robbins Reports Profits

Consolidated net profit of McKesson & Robbins, Inc., Bridgeport, Conn., for the three months ended March 31, the third quarter of the company's fiscal year, was $1,106,800, after all charges, including $3,395,577 for Federal taxes.

Prisoners of War Liberation Kits

American prisoners of war, newly liberated, are receiving "release kits" from the American Red Cross, in assembly and evacuation centers, set up by the Army in France. The kits contain socks, toilet articles, stationery, candy and cigarettes. Many of the men were unable to save personal possessions during the confusion of their release from the enemy. Each kit carries a card bearing the message "On behalf of the people of the United States of America, the American Red Cross extends warm greetings to liberated American prisoners of war. In the name of your loved ones at home, we salute you for your sacrifices for them and your country."

BRIDGEPORT...

For the past two years our facilities have been devoted almost exclusively to the production of war materials. We have been fortunate, in that we have been able to handle this work on the same equipment used for our regular peace time products, and, consequently, when material again becomes available for lipstick containers, vanity cases and other metal cosmetic items we will be prepared to start producing our regular line immediately. If you too are planning your post war program, we will be glad to assist you.

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BRIDGEPORT *Established 1909* CONNECTICUT

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NEW! UNIQUE! DISTINCTIVE!

SALES-STIMULATING!

We are happy to announce to the trade that we are prepared to distribute these two newly created, unusual, highly attractive Glass Stoppered Bottles, as shown here, *in one-half ounce and one ounce sizes!* For full particulars, prices, etc., WRITE US AT ONCE!

OTHER ITEMS WE CAN SUPPLY:

Plastic & Metal Closures for the Cosmetic Trade in a Variety of Designs and Colors

Bottles and Jars in Opal and Flint

Specializing in Enameling Closures Your Color!

Samples on Request!

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James Good Co. Severely Damaged by Fire

A two-alarm fire did extensive damage to the soap manufacturing plant of the James Good Co., Philadelphia, Pa., on April 14. The fire started on the second floor of the three-story structure and spread rapidly. Robert England, one of the owners, estimated that 50,000 pounds of oil were stored in drums on the third floor. Scores of drums exploded. Mr. England was unable to estimate the loss, but said operations would have to be suspended indefinitely.

Northam Warren Corp. Recognized for War Work

Recognition was given to Northam Warren Corp., Stamford, Conn., recently by North American Aviation, Inc., for its share of praise received from the War Production Board. The War Work Division of the Northam Warren Corp. has been making electrical connectors. It built an aluminum die casting plant and a plastics molding plant, and installed a complete battery of automatic screw machines. It is now equipped to produce more than 600 types of connectors. The Division has achieved such efficiency that the AAF depends on it to supply rush orders for special parts needed in emergencies. In addition, it has an "approved" rating, which means that AAF inspectors function in a supervisory capacity.

Chicago Drug & Chemical Assn. Gets Sports "Low-Down"

The Chicago Drug and Chemical Assn. heard Arch Ward give a talk on sports and the value of athletic competition, at the monthly meeting luncheon held April 27.

H. R. Hanmer Addresses Virginia Academy of Science

H. R. Hanmer, director of American Tobacco Research Laboratory, addressed the 23rd annual meeting of the Virginia Academy of Science, on May 11. The subject of his address to the academy, which has 800 members, was "The Responsibility of Science in a Post-War World." Mr. Hanmer is the first chemist from industry to be elected president of the Academy. His term of office is from May 11, 1945, to May 11, 1946.

DCAT Luncheon on Anti-Discrimination

The Drug, Chemical and Allied Trades Section of the New York Board of Trade, Inc., at its luncheon on May 17, heard Irving M. Ives, Majority Leader, New York State Assembly, discuss anti-discrimination. In addition, an American soldier, who had been held a prisoner by the Nazis, told of his escape. The luncheon was given in the Wedgewood Room of the Waldorf-Astoria Hotel.

Sterling Drug Planning Refinancing

At the annual meeting of the stockholders of Sterling Drug Co., New York, N. Y., to be held in Wilmington, Del., on June 14, new financing in the amount of $12,500,000 will be voted. It is planned to use the sum to retire temporary bank loans of $9,500,000, which was used to purchase Winthrop Chemical Co., which has become a wholly owned subsidiary, and to provide funds for plant expansions in the United States and abroad.

FINE AND SUPERFINE

Kelton Powders—Face, Bath, Talcum—have won an enviable place in the boudoir of madam and the dressing room of monsieur

Under many of the best known national labels, Kelton Powders associate with America's best people. Their quality holds friends and builds prestige for leading cosmetic houses who know that Kelton Powders are not only fine but superfine.

A line on your letterhead brings Self-Selling Samples which will tell you the truth without varnish.

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Father Gets Word of Son's Death On V-E Day—Both in the Trade

While the country was celebrating V-E day, a messenger delivered a telegram from the War Department to John Kappelmeier, who has been associated with Harry E. Pfaltz, New York, N. Y., for 15 years announcing that his son George had been killed in action in Europe. George Kappelmeier was 18 years old. Following his graduation from high school he was employed by the New York branch of the House of Hollywood where he was making excellent progress at the time he was called by the armed forces. He had a most agreeable personality and was an all-around athlete, having been given a try-out by the Brooklyn Dodgers after a scout had observed him playing baseball. He was also an expert with a rifle and qualified as a sharpshooter in the army.

Obituary

Dr. Martin Ittner

Dr. Martin Hill Ittner, chief chemist for Colgate-Palmolive-Peet Co., Jersey City, N. J., died April 22 after an illness of six months. He was 74 years of age.

Dr. Ittner was born at Berlin Heights, Ohio. His education consisted of degrees from Washington University, where he received his B.Ph. and B.Sc.; and Harvard where he received his A.M. and Ph.D.

He began his long association with the Colgate Co. in 1896, as chief chemist, and retained that title when the present Colgate-Palmolive-Peet Co. was organized in 1928.

Dr. Ittner had received many honors. In 1940 the National Association of Manufacturers conferred the honorary title of "modern pioneer" upon him. In 1942 the Society of Chemical Industry presented him with the Perkin Medal. He was past president and past treasurer of the American Institute of Chemical Engineers, past president of the New York Chemists Club, and former chairman of the New York section of the American Chemical Society. He went to London in 1936 as a delegate of the U. S. Government to the First World Chemical Engineering Congress.

Charles Jundt

Charles Jundt, founder of Charles of the Ritz, New York, N. Y., died on April 23, at the age of sixty-four.

Myron Drury

Myron M. Drury, vice-president of the Allen B. Wrisley Distributing Co., Chicago, Ill., died recently at the age of 91. He had been with the Wrisley Co. for 61 years, and acted as vice-president for 24 years.

Lucille Fidler Bacon

Lucille Fidler Bacon died on February 18, in Chicago Heights, Ill., as a result of an automobile accident. She had been in business with her husband, manufacturing toiletries under private label.

Samuel P. Nickells

Samuel P. Nickells died recently at his home in Ridgewood, N. J. He was with S. P. Penick & Co., New York, N. Y., until he retired in 1939, after 60 years in the drug industry. At the time of his death he was 79 years of age.

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MARKET REPORT

Glycerine Shipments from Argentina Likely

WHILE a further shrinkage in the spot supply of floral oils, vanilla beans and other French products was noted because of no replacements, arrivals of several tons of pale rose buds, and 900 tons of gum arabic were reported toward the latter part of last month. The appearance of new lots of arabic gum forced prices down slightly, but the receipts of rose buds, the first in about two years, moved directly into consumption without having the slightest influence upon the spot position.

VANILLIN UNOBTAINABLE

Some linalyl acetate continued to be available from oil petitgrain but acetate from bois de rose oil was virtually unobtainable. Linalool was likewise in a tight position, and such chemicals as citral, vanillin and coumarin were conspicuous by their absence. Cinnamic alcohol prices moved slightly in favor of buyers and because of lower raw material costs, a major mid-western producer announced a downward revision in butyl prices for May delivery.

No further shipments of benzyl benzoate are to be made except by specific WPB directives, and because of the tremendous quantities of benzoate to be used by the Government, most of the other benzyl derivatives will be difficult to obtain including benzyl acetate and benzyl alcohol. The major factor retarding production of most aromatic chemicals continued to be the shortage of labor.

LEMON OIL GOES TO ARMED FORCES

It is expected that additional quantities of bergamot oil will come forward from Italy but virtually all of the last lots that arrived have disappeared from the market and dealers advanced prices to $12 per pound in an effort to discourage further buying. Since the last lot of Italian lemon oil that arrived went directly to the armed forces there appears to be little hope that any additional quantities to come forward will find their way into the market for civilian use.

Progress is reported being made in the country in getting the new crop of peppermint into the ground. Meanwhile the usual rumors are being circulated in the local trade concerning a general weakening in the position of the market. Farmers in the country continue to face a serious labor problem, however, and there remains the uncertainty regarding weather conditions over the growing period. Some feel that the recent downward trend in menthol will have a bearish influence upon the peppermint oil market, but others are inclined to discount such expressions, especially since menthol prices have been abnormally high and far out of proportion to mint oil prices.

Among Spanish oils, spike lavender displayed a firmer tone at the close. Rosemary was rather unsettled at times, but no broad fluctuations in prices was noted.

GLYCERINE DEMAND NORMAL

The demand for crude glycerine was reported as more orderly over the past few weeks. With normal diplomatic relations between the Argentine and the United States having been restored, it is quite possible some lots of crude glycerine will eventually be shipped here. Based on authoritative reports several million pounds of crude material is believed to be available from Argentina and the appearance of a portion or all of these goods could easily bring about a decided change in the domestic picture. Some trade factors pointed out that there had been no further Lend-Lease inquiries in the market but this does not necessarily mean that there will be no further government purchases. The great amount of damage in Europe will, it is believed, result in a demand for a great many chemicals and glycerine will no doubt share in such a demand.

CLOVE OIL REMAINS TIGHT

Supply of clove oil remained tight. Major distillers point out that there is not sufficient facilities to meet demands. Producers in this country hold little if any stock in reserve. A general replenishment of angelica oil stocks is needed, but it is believed that the prices paid for replacement oils will not permit resumption of normal spot values.

While lower prices were quoted on West Indian orange oil, other varieties of orange displayed considerable strength. Florida oil is reported in a well sold up position and distributors of California oil do not appear to be having any difficulty in locating a ready outlet for everything that is available for immediate delivery. Shipping prices on Brazilian oil remain high with comparatively few offerings coming through.

VANILLA BEAN CROP FAILS

The new crop of Mexican vanilla beans is reported a failure because of the excessive drought that was noted during the growing season. Late advices from Madagascar were more favorable regarding the possibilities of future shipments. In fact, some reports indicated that a large quantity of beans was expected to be shipped in the first week in May from Tamatave. All shippers of vanilla beans met at the Govoners House on April 23, and it is believed that, at that time, most of the difficulties and problems concerning future exports of vanilla had been fairly well ironed out.

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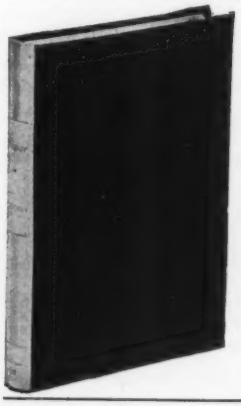

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(Continued on page 101)

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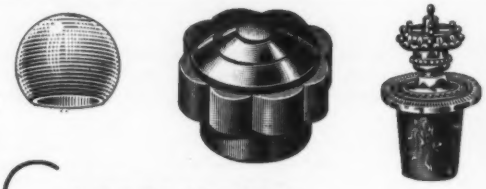

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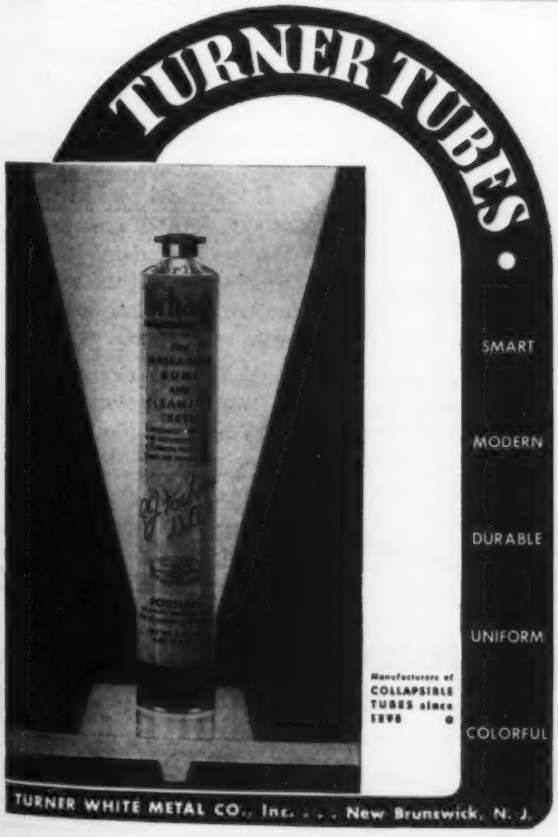

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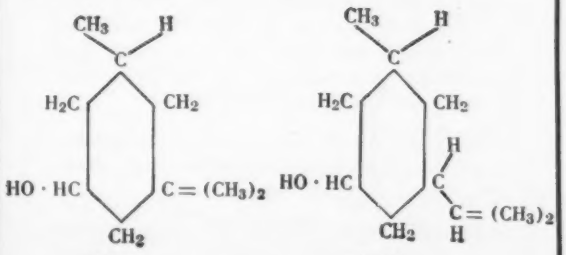

FIG. 1 FIG 2

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Technical Editor of the American Perfumer & Essential Oil Review, Expert Consultant, Engineer Board, U. S. Army; Special Lecturer in Cosmetics, Wayne University, College of Pharmacy; Consulting Chemist

Fifteenth Installment

The fourteenth installment was published in the preceding issue. Subsequent installments will appear in forthcoming issues.

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CHAPTER IV

(*continued*)

Physical and Chemical Testing
Gravimetric and Volumetric Methods

C-289—PETROLEUM WAXES, ANALYSIS AND COMPOSITION OF

(*D. S. McKittrick, H. J. Henriques & H. I. Wolff. J. Inst. Petrolatum Tech.*, **23**, *616, 1938*)

Wax in oil or vice versa is determined by crystallizing from dichlorethane or chloroform at −35° C or −55° C. Use 75 cc solvent per gram of oil or wax. Dichlorethane removes low and high melting waxes. Chloroform is preferred for paraffinic oils. Dichlorethane gave sharper wax fraction separations. Physical properties of 95 pure hydrocarbons are tabulated. Wax fractions can be recognized from refractive index and melting points. High melting waxes consist chiefly of normal paraffins, while lower melting point products are isoparaffins, naphthenes and aromatics. Petrolatums are mixtures of moderately hard waxes and oils of low pour point. Various American crudes and isolates are analyzed and described.

C-290—PHARMAGEL

Brand of gelatin. See C-167-8.

C-291—PHENOL

(*Carbolic Acid U.S.P.*)

An aqueous solution of phenol yields with bromine T.S. a white precipitate which at first redissolves but becomes permanent as more of the reagent is added.

Add 1 drop of ferric chloride T.S. to 10 cc of an aqueous solution of phenol (1 in 100): the liquid acquires a violet blue color.

Assay: Dissolve about 1.5 gm of phenol, accurately weighed, in sufficient distilled water to make 1000 cc of solution. Transfer an aliquot of the solution, containing from 38 to 41 mg of phenol, to an iodine flask, add 30 cc of tenth normal bromine, then 5 cc of hydrochloric acid, and immediately insert the stopper. Shake the flask repeat-

edly during 30 minutes, allow it to stand for 15 minutes, remove the stopper just sufficiently to introduce quickly 5 cc of an aqueous solution of potassium iodide (1 in 5), being careful that no bromine vapor escapes, and at once stopper the flask. Shake thoroughly, remove the stopper, and rinse it and the neck of the flask with a little distilled water, so that the washings may flow into the flask. Add 1 cc of chloroform, shake the mixture well, and titrate the liberated iodine with tenth normal sodium thiosulfate, using starch T.S. as the indicator. Each cc of tenth normal bromine is equivalent to 0.001569 gm of C_6H_6O.

C-292—PHENOLS, NEW COLOR REACTIONS FOR

(*A. Steigmann, J. Soc. Chem. Ind.* **61**, *180, 1942*)

The following reactions are described. (A) To 5 ml of 1:7500 aqueous sodium B-naphthaquinone sulfonate solution add the test solution and then 0.3 ml of dilute ammonia (50 ml of 0.880 solution, 150 ml of water). Prepare a blank test. A blue or bluish-green color in 3-5 minutes indicates a monohydric phenol or resorcinol; chlorinated monohydric phenols mostly give a bluish green color. The color changes to red-brown or brown on addition of 0.5 ml of 5 *N* acetic or sulfuric acid. Pentachlorophenol, some p-phenols, e.g., tyrosine, and 2,4,6,-trichlorophenol, concentrated and easily oxidized phenols, e.g., pyrocatechol, quinol and metol, and polyhydric phenols, e.g., phloroglucinol, do not give the test. Substances with reactive NH_2 and CH_2 groups may cause discolorations in the test, but can be distinguished from phenols, as they react in absence of ammonia. (B) Add 0.1-1 ml of the neutral test solution to 5 ml of 1:8000 aqueous p-aminodiphenylamine hydrochloride solution (from a 1:100 stock solution) and then 0.5 ml of 3 percent chloramine T solution. A blue, red violet or violet color indicates a monohydric phenol if the solution does not give a similar color with chloramine T alone at the same dilution as with easily oxidized phenols. Strong reactions are obtained from phenol, cresol, and 8-hydroxyquinoline (violet); o-and m-chlorophenols (blue); chlorothymol and isochlorothymol (red violet). The reaction is inhibited by proteins such as glue and gelatin. The dyes are sparingly soluble in water, but soluble in sodium hydroxide solutions, the blue dyes becoming violet. The reaction may be used for spot tests, the sensitivity limit being 1.0 according to the phenol. The following data are given for 11 phenols: (See Table). The sensitivity limits (in mg) of the p-aminodiphenylamine spot tests are: phenol and cresol 5; resorcinol 1-2; p-chlorophenol 50; p-chloro-m-cresol 25; chloro- and isochlorothymols 10; 2,4,6-trichlorophenol 20. Pentachlorphenol—the silver salt of pentachlorophenol is obtained at pH 8-9 as an intense yellow, voluminous precipitate insoluble in dilute acetic acid, but somewhat soluble in ammonia. The dark red-brown copper salt is obtained at pH 5-6; it is changed to white by acetic acid (formation of free pentachlorophenol) and dissolves in ammonia, forming a colorless solution. These salts are obtained in colloidal solution in presence of protective colloids. The salts of other chlorophenols are soluble in dilute acetic acid.

Procedure: Place 1 drop of 0.1 *N* silver nitrate on filter-paper and when it is almost dry add the test solution (pH 8-9): when dry, the yellow spot, if formed, is touched with a drop of 5 percent acetic acid. A yellow spot or ring indicates pentachlorophenol. The sensitivity limit is 10 micrograms. (*Thru Analyst* **68**, *26, 1943.*)

TABLE 31

PHENOL	Dilution Limit A	Dilution Limit B	Color A	Color B
Phenol	1:250,000	1:125,000	Blue	Violet
Cresol	1:250,000	1:125,000	Blue	Violet
B-Naphthol	1:50,000	1:75,000	Yellow-Green	Greenish
8-Hydroxyquinoline	1:500,000	1:250,000	Blue	Red-Violet
Pyrocatechol	1:100,000	Not Characteristic	Yellow-Green	Brown
Phloroglucinol	1:100,000		Violet	Brown
Resorcinol	1:3,000,000	1:250,000	Dark Blue	Brown
m-and-o-Chlorophenols	1:40,000	1:125,000	Blue to Blue Green	Blue Violet
p-Chloro-m-cresol	1:40,000	1:25,000	Blue to Blue Green	Violet
Chloro-and isochlorothymols	1:100,000	1:50,000	Blue to Blue Green	Red Violet
2. 4. 6.—Trichlorophenol	No Reaction	1:25,000	No Reaction	Blue

C-293—PHENYL MECURIC ION

(*N.N.R. 1944*)

Determine the phenylmercuric ion content of 0.2 gm of basic phenylmercuric nitrate dissolved in 90 cc of water and acidified with 10 cc of concentrated nitric acid. Titrate the solution with twentieth Normal ammonium triocyanate, using 2 cc of saturated ferric ammonium sulfate solution as the indicator. Compare the color produced against a blank control containing 0.1 cc of the ammonium thiocyanate solution. Each cubic centimeter of twentieth Normal ammonium triocyanate is equivalent to 0.01389 gm of phenylmercuric ion: the phenylmercuric ion content found is not less than 87.0 nor more than 87.9 percent.

C-294—PHENYL SALICYLATE

Responds to test for phenol and salicylate, after saponification, C-291 & C-353.

C-295—PHOSPHATES, DETERMINATION OF

(*A.O.C.S.*)

If a qualitative test has shown the presence of phosphates and their determination is desired, the matter insoluble in alcohol [See C-240, "Total Matter Insoluble in Alcohol" (1)] or the ash from the incineration of an original sample can be used. An original sample should always be used when the highest accuracy is desired.

(1) Reagents. (a) Molybdate solution. Dissolve 100 gm of molybdic acid in dilute ammonium hydroxide [144 cc of

ammonium hydroxide (sp. gr. 0.90) and 271 cc of water]; pour this solution slowly and with constant stirring into dilute nitric acid [489 cc of nitric acid (sp. gr. 1.42) and 1,148 cc of water]. Keep the final mixture in a warm place for several days or until a portion heated to 40°C deposits no yellow precipitate of ammonium phosphomolybdate. Decant the solution from any sediment and preserve in glass-stoppered vessels.

(b) Ammonium nitrate solution. Dissolve 100 gm of commercial ammonium nitrate, phosphate-free, in water, and dilute to 1 liter.

(c) Magnesia mixture. Dissolve 55 gm of crystallized magnesium chloride ($MgCl_2.6H_20$) in water, add 140 gm of ammonium chloride, 130.5 cc of ammonium hydroxide (sp. gr. 0.90), and dilute to 1 liter.

(d) Dilute ammonium hydroxide for washing. Dilute 100 cc of ammonium hydroxide (sp. gr. 0.90) to 1 liter.

(2) Determination. Weigh out a 2-gm (± 0.01 gm) sample of the alcohol-insoluble or ash, and proceed as in C-366 for removal of silica, saving the filtrate. Make up to 250 cc, concentrating if necessary. Pipet an aliquot of the solution corresponding to 0.50 gm. or 1 gm into a 250 cc beaker; add ammonium hydroxide in slight excess; and barely dissolve the precipitate formed with a few drops of nitric acid stirring vigorously. Add about 15 gm of crystalline ammonium nitrate or a solution containing that quantity. To the hot solution add 70 cc of the molybdate solution for every decigram of phosphoric acid (P_2O_5) present. Digest at about 65°C for 1 hour and determine whether or not the phosphoric acid has been completely precipitated by the addition of more molybdate solution to the clear supernatant liquid. Filter, and wash with cold water or preferably with the ammonium nitrate solution. Dissolve the precipitate on the filter with ammonium hydroxide (1:1) and hot water and wash into a beaker to a volume of not more than 100 cc. Neutralize with hydrochloric acid, using litmus paper or bromthymol blue as an indicator; cool; and from a buretta add slowly (about 1 drop per second), stirring vigorously, 15 cc of the magnesia mixture for each decigram of phosphoric acid (P_2O_5) present. After 15 minutes, add 12 cc of ammonium hydroxide. Let stand until the supernatant liquid is clear (usually 2 hours), filter, wash the precipitate with the dilute ammonium hydroxide until the washings are practically free from chlorides, dry, burn first at a low heat and ignite to constant weight, preferably in an electric furnace, at 950-1000° C; cool in a desiccator, and weigh as $Mg_2P_2O_7$. Calculate and report the result as percentage of P_2O_5 or alkaline phosphate known to be present.

C-296—PHOSPHATE

(*U.S.P.*)

Neutral solutions of orthophosphates yield with silver nitrate T.S. a yellow precipitate, which is soluble in ammonia T.S.

C-297—PHTHALATES

Saponify with a mixture of equal parts KOH and water for 1 hour if only methyl or ethyl phthalates are suspected; 2 hours for butyl or amyl phthalates. Filter cold, through cotton. A 5 cc portion is evaporated to dryness. An amount of resorcinol equal to about twice the amount of residue is added, followed with 2-3 drops concentrated sulfuric acid; heat until a light caramel color develops. Cool and dilute with about 50-100 cc water, and add an excess sodium or potassium hydroxides. A greenish fluorescence indicates phthalates.

C-298—PHTHALIC ACID

See Monoethanolamine C-251 and C-297

C-299—COLORIMETRIC DETERMINATION OF PILOCARPINE AND ITS SEPARATION FROM OTHER ALKALOIDS

(*Irwin S. Shupe, J. Assoc. Off. & Agr. Chem.* **26,** *757, 1941*)

Principles of Methods Used

Pilocarpine has been shown by Jowett to contain a lactone group that can be saponified with alkali to yield a water-soluble salt. The alkaloid may be regenerated by treatment with acid. This property offers a basis for its separation from quinine and other alkaloids that do not react with fixed alkali. It was found possible to retain pilocarpine with a sodium hydroxide solution and to effect a complete removal of quinine and other alkaloids by extraction with chloroform. The pilocarpine can then be quantitatively recovered from the alkaline solution by acidification and extraction with chloroform from an ammoniacal solution.

Methods

Separation of Pilocarpine from Quinine (and Other Alkaloids)

To 10 ml of an aqueous solution of alkaloids containing pilocarpine, add about 0.1 gram of $NaHSO_3$ and a 3 ml excess of 10 percent NaOH. Mix, and let stand 5 minutes. Extract with five 20 ml portions of $CHCl_3$. Wash the extracts with 5 ml of water. (The washed $CHCl_3$ extracts may be retained for the determination of quinine and other alkaloids.)

Add the 5 ml of wash water to the residual alkaline solution and add 2 ml excess of concentrated HCl. Mix, and let stand about 15 minutes. Add a slight excess of ammonia and extract immediately with five 20 ml portions of $CHCl_3$. Filter the $CHCl_3$ through a pledget of cotton into a beaker. Evaporate the $CHCl_3$ on a steam bath.

Reserve the evaporated residue of pilocarpine for colorimetric determination.

Determination of Pilocarpine

Volumetric.—To determine the approximate quantity of pilocarpine in the $CHCl_3$ residue after separation from other alkaloids, dissolve the residue in water and make to 25 ml in a volumetric flask. Titrate one 10 ml portion with 0.02 *N* acid, using methyl red indicator; 1 ml of 0.02 *N* acid = 4.16 mg of pilocarpine.

Colorimetric.—To six 150 ml separatory funnels, transfer 10 ml (or smaller portion) of sample containing 0.2-2.0 mg of pilocarpine and aliquots of 10, 5, 2.5, 1.0 and 0.5 ml of standard pilocarpine solution. Add water if necessary to make to 10 ml volume.

To each funnel add 1 ml of the acetic acid and an accurately measured 20 ml portion of $CHCl_3$. Then add 1 ml each of 5 percent K_2CrO_4 and 3 percent H_2O_2. Shake vigorously for about ½ minute. Allow the layers to separate and filter the $CHCl_3$ through filter papers into small glass-stoppered flasks. Protect from direct sunlight and as much as possible from daylight.

Compare the colors, preferably in a photometer. If a visual neutral-wedge photometer is used, take an average scale reading on each $CHCl_3$ solution. Use a No. 56 filter and a 2 inch cell. (Other sizes of cells are optional for different ranges of pilocarpine.)

Plot the average scale readings against mg of pilocarpine. From the scale reading on the sample, calculate its equivalent in pilocarpine.

C-300—PILOCARPINE

Journal reference same as for C-299. Also, see C-1

C-301—PLASTICS & SYNTHETIC RESINS

(T. P. Gladstone Shaw, Ind. & Eng. Chem. Anal. Ed., ***16,*** *541, 1944)*

In most fields there are published methods covering the separation of vehicles, or plasticizers from the resinous constituents that may be encountered. It is beyond the scope of this paper to do more than briefly indicate the methods employed.

Removal of Vehicles and Plasticizer: In handling a solution, addition of a non-solvent such as ligroin or water to precipitate the resins is useful. The plasticizer will usually be left in solution. If test-tube experiments show this method is not feasible, the solution may be poured into boiling water or dried by evaporation. Both the latter methods leave the pigments and plasticizers in the resins and they will require further treatment.

Oily vehicles may usually be removed by precipitation of the resin by a non-solvent.

Pigments and Fillers: Finely divided pigments sometimes offer considerable difficulty. If the pigment is held by Alundum or paper thimbles a Soxhlet extraction of the vehicle-free resins by a solvent will do. At times repeated filtration in the presence of a filter aid such as Filter-Cel on a suction or pressure filter, using a very dilute solution in a low viscosity solvent, is required. Centrifuging will serve in some cases.

Dyes: Dyes are even worse to handle but precipitation by a non-solvent, a procedure which must be repeated several times for removal of vehicles and plasticizers, usually leaves most of the dye in solution. Preliminary tests often indicate a solvent for the dye which has sufficient swelling action on the resin for a Soxhlet extraction of the dye to be made.

Mixed Resins

Where a mixture of resins is suspected these must be separated into as pure fractions as possible by suitable extraction or precipitation procedures designed to meet the particular case in hand. Fractions so separated, dried, and free from solvent are treated independently.

Test I. Solubility. Place about 1 gm of sample in a test tube with 10 cc of solvent, shake at room temperature several hours, then note carefully whether the resin is soluble, partly soluble, or insoluble, or whether there is any color in the solvent or resin.

Test II. Liebermann-Storch Reaction: Place a small fragment of resin on a spot plate and cover with a few drops of acetic anhydride. Now add 1 drop of concentrated sulfuric acid, so that it enters the liquid. Note the color reactions in the liquid and on the resin surface. Observe over a period of half an hour. List the colors in the order of their formation.

Test III. Odor on Carbonate Fusion: This test suppresses the acid constituents in the volatile decomposition products and allows some odors to be more readily recognized.

Fuse a piece of resin with 1.25 cm (0.5 inch) of anhydrous sodium or potassium carbonate in a test tube. Note odors, fumes, and tendency to char.

Test IV. Nitrate: Dissolve a few crystals of diphenylamine in about 0.5 cc of 90 percent sulfuric acid and place a drop of this reagent on a piece of the resin on a spot plate. An immediate intense blue color indicates nitrocellulose or esters such as cellulose nitroacetate. Even a small percent of nitrocellulose in another resin will yield this test, but the color will develop more slowly.

Test V. Carboxylic Esters: Place a small piece of resin in a clean test tube and add 1 cc of 6 percent alcoholic (water-white sodium or potassium hydroxide, then 1 drop of a saturated alcoholic solution of hydroxylamine hydrochloride. Shake and let stand for 5 minutes. Heat for about 30 seconds while boiling, add 1 drop of 1 percent aqueous ferric chloride solution, and add carefully just sufficient 10 percent aqueous hydrochloric acid to dissolve the ferric hydroxide precipitate; then cautiously add a few drops in excess. A strong violet color indicates carboxylic acid esters. The color may be so strong that dilution with water is necessary in order to note it.

Too much hydrochloric acid will destroy the color and is to be avoided, but in negative tests a sufficient excess should be added (1 cc) drop by drop to remove all doubt of the possibility that it is insufficient.

Test VI. Odor on Ignition: Heat a piece of resin strongly in a test tube, and note odor, fumes, charring, and presence of distillate.

Test VII. Test for Phthalates: Heat about 1 gm of resin with about 2 to 3 gms of pure phenol plus 5 drops of concentrated sulfuric acid until the melt turns orange or brown. Cool, dilute with water, and render alkaline with 10 percent aqueous sodium hydroxide. Characteristic red color of phenolphthalein indicates the presence of phthalates.

This test is preferred to the fluorescein test for phthalates and is less subject to error due to inexperience.

Test VIII. Test for Phenolic Resins: This is the reverse of the test for phthalates. Heat about 1 gm of resin with about 1 gm of phthalic anhydride and 3 drops of concentrated sulfuric acid until a rich brown melt develops, cool, dilute with water, and render alkaline with 10 percent aqueous sodium hydroxide. Characteristic red color of phtnolphthalein indicates presence of phenols. In cases where tarry matter obscures the color, dilute with water, and confirm by discharging the color by acid. All phenolics tested, with the exception of an oil-modified one, gave a positive reaction with this test.

Test IX. Millon's Reagent For Phenolic Resins: Prepare the reagent by dissolving 10 grams of mercury in 10 grams of fuming nitric acid without heating, then dilute with twice its volume of water, and filter off any precipitate, or allow it to settle.

Heat a small piece of resin with 1 cc of clear reagent and boil about 2 minutes. A red color indicates phenols.

As the test is characteristic of the phenol group it is also given by some proteins. The absence of nitrogen will, however, direct the test to phenolic resins. A few phenolic resins fail to yield a positive test.

Test X. Cumarone-Indene Resins: This is a modified

form of Ellis test. With the latter it was found very difficult to decide whether the color was due to bromine or the resin. The modification gives a positive test with the usual cumarone resins but is negative with the low molecular weight polymers.

Dissolve 0.1 to 0.5 gm of resin in 10 cc of chloroform, add 1 cc of glacial acetic acid and 1 cc of 10 percent bromine solution in chloroform, and let stand overnight. A red color indicates cumarone resins.

Do a blank at the same time.

Using 1 cc of the highly colored solution, add about 1 to 2 cc of 0.1 *N* sodium thiosulfate and shake vigorously. The blank will discharge to a light yellow color in the chloroform layer. A red color in the chloroform layer is evidence of the presence of high or medium molecular weight cumarone resins.

Test XI. Formaldehyde. Mix a small piece of resin and 2 cc of 72 percent sulfuric acid (100 cc of water and 150 cc of concentrated sulfuric acid) plus a few crystals of chromotropic acid and heat by standing the test tube in a beaker of water at 60° to 70° C for 10 minutes. Run a blank at the same time to avoid chance contamination from the laboratory air. A bright violet color indicates formaldehyde. Note the color after standing 1 hour at room temperature.

Test XII. Xanthoproteic Reaction: This test depends upon the presence of a phenyl group and is usually used to identify certain proteins which contain it. It is also shown by some oils and phenolic resins. It is sometimes useful as a confirmatory reaction. Warm a small piece of resin with concentrated nitric acid for several minutes, cool, and add an excess of ammonium hydroxide. In the presence of a phenyl group the nitric acid is yellow, changing to an orange on addition of the ammonium hydroxide.

Test XIII. Acetates: Add a 5 percent aqueous solution of lanthanum nitrate and 1 drop of 0.1 *N* iodine solution, followed by a drop of concentrated ammonium hydroxide, to a piece of the resin on a spot plate.

In the presence of acetates or propionates a brown or blue coloration quickly develops in the resin. This may occur before the ammonium hydroxide is added and indicates addition of iodine to the resin.

When in doubt, warm a piece of resin with a few drops of concentrated hydrochloric acid in 1 cc of water for about 10 minutes and apply the test to about 0.5 cc of the water, making sure sufficient ammonium hydroxide is added to render it ammoniacal.

Test XIV. Aldehydes in Acetals: Heat a small piece of resin plus 1 cc of reagent and 0.4 cc of concentrated sulfuric acid on a steam bath for 2 to 3 minutes, then cool. Add a few drops of pure methanol and a layer of chloroform, then 0.5 cc of concentrated hydrochloric acid, and shake the tube well. In the presence of aldehydes a red to purple color appears in the chloroform.

Reagent: 0.01 gm of azobenzene phenylhydrazine sulfonic acid in 100 cc of distilled water.

Classification According to Types and General Reactions

Where the substance does not appear to give the confirmatory tests following its systematic separation by the above scheme, or where, because of its history, distinction between only a few substances is required, this classification according to types, with the reactions generally shown by them, will be found useful:

Acrylate Resins: Light-colored resins. n_D^{20} about 1.49. Specific gravity 1.2. Usually without filler. Soluble in acetone, esters, benzene; insoluble in CCl_4, 95 percent ethanol, ether. Test VI, sickly sweet odor of monomer, with practically complete distillation.

Alkyd Resins: Usually light color. n_D^{20} 1.54-1.59. Specific gravity 1.1-1.4. Test II, usually brown. Test V, usually positive. Test VI, formaldehyde, oily or acrolein odor, considerable distillation. Test VII, usually positive. Usually insoluble in 95 percent ethanol, ether, CCl_4.

Amino and Protein Resins: Usually light-colored. n_D^{20} 1.55. Specific gravity 1.1-1.35. All are insoluble in the solvents listed except melamine-formaldehyde, which is soluble in pyridine or acetic acid, and gelatin which is water-soluble.

Test III, NH_3 with burning hair odor characteristic of all except melamine-formaldehyde which gives a formaldehyde odor. Test VI, similar to Test III. Test XI, positive with urea-formaldehyde, melamine-formaldehyde, casein-formaldehyde. Negative with polyamide resin and gelatin. Test XII, positive with gelatin and casein-formaldehyde resins only.

Cellulose Esters: Usually light color, n_D^{20} 1.47-1.51. Specific gravity 1.2-1.4. Nitrocellulose burns rapidly, other esters burn slowly; former yields Test IV. Test V, positive except for nitrocellulose. Test VI, odor of burning paper. Test XI, negative to red. Saponification number 500 to 550.

Cellulose Ethers: Usually light color. n_D^{20} 1.47. Specific gravity 1.10-1.25. Solubilities vary according to ethoxyl content, higher ethoxyl being more soluble. Methylcellulose soluble in hot water and insoluble in most other solvents. Test VI, odor of burning paper accompanied by benzaldehyde odor in case of benzyl cellulose. Test XIV, usually positive.

Chlorinated Diphenyls: Usually light color, vary from thin liquids to hard solids. n_D^{20} 1.61-1.71. Specific gravity 1.34-1.95. Yield strong halogen test. Soluble in all solvents listed in Table II. Test XI, slight acrid odor, much distillation.

Cumarone-Indene Resins: Vary from light- to dark-colored liquid or solid resins. n_D^{20} 1.6-1.66. Specific gravity 1.01-1.15. Insoluble in 95 percent ethanol and acetic acid. Usually soluble in ether, acetone, esters, dioxane, or pyridine.

Test II, red color characteristic which may change to brown or violet, rarely to green. Test VI, indenelike odor and almost complete distillation. Test X, positive with higher molecular weight polymers. Hydrogenated cumarone resin insoluble in acetone and Test II weak orange; otherwise similar.

Phenolic Resins: Vary from light to dark resins, usually solids. n_D^{20} 1.47-1.7. Specific gravity 1.1-1.27. Mostly soluble in pyridine, acetone, ether, tetrachloroethane, dioxane, and ethyl acetate, but usually insoluble in 95 percent ethanol. Heat-reacted forms may be insoluble in all solvents.

Test II, may be negative but browns predominate. Test VI, odor of phenol or formaldehyde with considerable distillation. Test IX, frequently positive. Test XII, positive. Test XIV, frequently positive.

Resin Products: Straw to highly colored liquids and solids. n $\frac{20}{D}$ 1.52-1.61. Specific gravity 1.03-1.22.

Soluble in most solvents used in solubility test with the following exceptions: Polybasic acid insoluble in CCl_4, benzene. Dihydromethyl abietate, partially soluble in pyridine or acetic acid. Red colored modified resin (Vinsol) insoluble in CCl_4 or benzene.

Test II, red to violet color. Test V. If any odor is pine or balsamlike, resin distills without residue. Saponification number low except for hydrogenated rosins and the polybasic acid. Acid number over 100 only in case of the Vinsol resin. Acetyl number zero except for Vinsol resin.

Rubber and Rubber Substitutes: Halogen Containing. Chloroprene is black rubbery resin, characteristic odor, insoluble in all solvents. Rubber hydrochloride and chlorinated rubber light colored. Former insoluble in all except tetrachloroethane; latter soluble in ethyl acetate, dioxane and pyridine. Cashew nut oil polymer is sticky black resin soluble in pyridine only.

Butadiene Copolymers: Black rubbery solids. Butadienestyrene copolymer insoluble in all solvents. Butadiene acrylonitrile copolymer insoluble in all solvents, contains nitrogen.

Polyisobutylenes and Copolymers with Diolefins: Light-colored fluids to rubbery solids. Copolymers usually dark colored.

Polysulfide Rubbers. Contain much sulfur. Specific gravity 1.34. Soluble in dioxane, pyridine, tetrachloroethane. Test II, red violet changing to brown. Test VI, mercaptan odor, considerable distillate.

Vulcanized Natural Rubber: Contains sulfur. n $\frac{20}{D}$ 1.52. Specific gravity 1.1-1.18. Insoluble in all solvents. Test VI, characteristic odor of burning rubber, no distillate.

Sulfonamide Resins: Light colored varying from soft viscous fluid to hard resins. n $\frac{20}{D}$ 1.56-1.60. Specific gravity 1.31-1.36. Soluble in most solvents shown in Table VI, insoluble in CCl_4. Test XI, strong violet.

Terpene Resin: Light-colored solid. Soluble in ether, CCl_4, tetrachloroethane, benzene, ligroin. Insoluble in 95 percent ethanol, acetone, dioxane, ethyl acetate, acetic acid. Test VI, odor like coal gas, distils completely.

Vinyl Resins: Halogen-containing. Strong test for halogen. Very light-colored solids. n $\frac{20}{D}$ 1.53-1.61. Specific gravity 1.2-1.75. Insoluble in ligroin and benzene. Test II, blue or green color slowly develops in resin.

Polyvinyl Esters: Colorless solids. n $\frac{20}{D}$ 1.47. Specific gravity 1.19. Polyvinyl acetate soluble in all the solvents except ethel and ligroin. Copolymers insoluble in ether and ligroin but may also be insoluble in the other solvents.

Test II, resin turns green; this is characteristic. Test V, red violet. Test VI, characteristic odor, very slight distillate containing the acid usually acetic. Test XI, red to negative. Test XII, blue or purple to black. Saponification number 400 to 600.

Polyvinyl Alcohol-Acetate: Light-colored resin. n $\frac{20}{D}$ 1.47-1.55. Specific gravity, 1.2-1.33. Low and medium acetates insoluble in everything except water. High acetates soluble in pyridine. Test II, green to brown color. Test V, red violet. Test VI, pungent acidic odor, no distillate. Test XIII, violet to blue or purple. Acetyl number, low acetate type, 1080 to 1270. Saponification number: low acetate, 0 to 119; medium acetate, 120 to 325; high acetate, 325 to 540.

Polyvinyl Acetals: Light-colored resins. n $\frac{20}{D}$ 1.46-1.50. Specific gravity 1.11-1.23. All insoluble in ether, CCl_4, ligroin. All soluble in dioxane, pyridine, tetrachloroethane, or acetic acid.

Test II, usually brown. Test V, red violet. Test VI, charactertistic odor of aldehyde indicates type; little distillate. Test XI, violet with formals, red or brown with acetals, red with butyrals. Test XIV, usually red violet, formals may be negative.

Polystyrene: Light-colored resin. n $\frac{20}{D}$ 1.59. Specific gravity 1.05. Soluble in dioxane, pyridine, CCl_4, tetrachloroethane, benzene. Insoluble in 95 percent ethanol, acetone, ether, acetic acid, ligroin. Test VI, odor of styrene, complete distillation. Saponification number, zero.

C-302—DETERMINATION OF CERTAIN POLYALCOHOLS, IN THE PRESENCE OF EACH OTHER

(N. Allen, H. Y. Charbonnier, and R. M. Coleman, Ind. & Eng. Chem. Anal. Ed. **12,** *384, 1940)*

Qualitative test to distinguish between glycerol and ethylene glycol solutions: Since glycerol reacts with periodic acid to produce formic acid, whereas ethylene glycol does not, a simple test may be devised to distinguish between the two when present alone.

Take about 2 ml of the solution to be tested, add a drop of methyl red indicator solution, and cautiously neutralize with dilute sodium hydroxide or dilute acid, leaving the solution just on the alkaline side of methyl red. Take about 2 ml of a solution of periodic acid, add a drop of methyl red, and adjust to the neutral point of the indicator, leaving the solution just on the alkaline side. An adjusted solution of sodium paraperiodate or potassium metaperiodate may be used. Mix the sample with the periodate solution and observe. If glycerol is present, the solution will turn pink immediately.

C-303—POLYHYDRIC ALCOHOLS, COLORIMETRIC DETERMINATION OF

(G. Gilta, Bull. Soc. Chim. Belg. **52,** *87-93, 1943 Chem. Zentr. 1943, II, 1654)*

Polyhydric alcohols can dissolve certain insoluble metal hydroxides by forming soluble complex salts. Thus with $Cu(OH)_2$ a blue solution is obtained whose color is dependent upon the concentration of the polyhydric alcohol. To 10 ml of the alcohol solution add 10 ml of 2 percent NaOH and 4 percent $CuSO_4$ dropwise until a faint opalescence is obtained. Dilute to definite volume and measure the color in a Pulfrich photometer with filter S 61. Mixtures of polyhydric alcohols with not more than 40 percent monosaccharides can be tested in this way to obtain the alcohol content, after which the solution can be boiled and the residual color used to est. the monosaccharide. The presence of tartaric acid causes a deepening of the color of the Cu complex; from this a procedure for determining polyhydric alcohols in the filtrate from the determination of sugar by Fehling's method has been worked out. *(Through C. A.* **38,** *5471-72, 1944.)*

C-304—POLYOLS; SORBITOL, MANNITOL QUALITATIVE DETERMINATION OF GLYCEROL, ETHYLENE GLYCOL AND OTHER POLYALCOHOLS IN DILUTE AQUEOUS SOLUTION

(A. G. Hovey, T. S. Hodgins, Ind. & Eng. Chem. Anal. Ed. ***9,*** *509, 1937)*

The best conditions for the color determination of glycerol appear to be as follows:

Place the following ingredients in a 15-cm (6-inch) test tube in the order given: (1) 3 ml of the solution to be tested, (2) 3 ml of 10 percent aqueous solution of catechol (freshly prepared, since such solutions color with age even if kept in a dark bottle), and (3) 6 ml of concentrated sulfuric acid.

Heat the tube gently for about 30 seconds.

If glycerol is present, a blood-orange coloration will quickly appear at about 140° to 145° C. The color so produced is stable over a period of many days, unlike Mulliken's test which changes color after a few minutes.

With ethylene glycol, diethylene glycol, and ethyl alcohol, no color is formed. With other polyhydric alcohols, distinctive colors (see Table) are produced, which may serve as a means of identification.

It is important not only that the order of mixing be followed as above, but also that the tube containing the solution to be tested and the catechol solution be well shaken before the addition of the concentrated sulfuric acid. Merely mixing the three materials, and then shaking and warming produces unreliable results—i.e., in the case of ethylene glycol, a very faint pink color may be observed instead of the water-white condition which is obtained when the correct order of procedure is followed. In the case of glycerol, however, merely mixing and warming the three materials do not interfere with the characteristic blood-orange coloration.

TABLE 32

COLOR DIFFERENCES FOR ALCOHOLS VARYING IN THE NUMBER OF HYDROXYL GROUPS

—OH Groups	Alcohol	Color
1	Ethyl alcohol	Water-white
2	Ethylene glycol	Water-white
2	Diethylene glycol	Water-white
2	Propylene glycol	Faint pink
2	Triethylene glycol	Faint pink
2	Trimethylene glycol	Dark brown
3	Glycerol	Blood-orange
4	Pentaerythritol	Dark purple-red
4	Erythritol	Faint pink
6	Mannitol	Red-orange
6	Sorbitol (neutral)	Blue
6	Sorbitol (H_2SO_4)	Faint pink

C-305—POLYSULFIDES, REACTION FOR—GIL

(Merck Index)

Boil 96 percent alcohol in a flask until the air has been displaced by alcohol vapors, then immediately add a solution containing polysulfides; the mixture becomes blue. Monosulfides do not give the reaction.

C-306—POTASH, SULFURATED

(U.S.P.)

An aqueous solution of sulfurated potash (1 in 10) is light brown in color and is strongly alkaline to litmus paper.

To a portion of the solution from test A, add an excess of acetic acid: hydrogen sulfide is evolved and sulfur is precipitated.

Filter the mixture from test B and add to the filtrate an excess of sodium bitartrate T.S.: an abundant, white crystalline precipitate is formed within 15 minutes.

C-307—POTASSIUM, THE VOLUMETRIC DETERMINATION OF WITH METHYLENE BLUE FOLLOWING ITS PRECIPITATION AS POTASSIUM PICRATE

(A. Bolliger, J. Biol. Chem. ***107,*** *229-34, 1934 cf. C. A.* ***28,*** *71, 3338)*

The potassium is precipitated from a concentrated neutral solution by addition of about 10 volumes 25 percent Ca picrate in absolute alcohol. The precipitate is dissolved in hot water and titrated with 0.001 *N* methylene blue as previously described. Solutions containing up to twice as much Na as K can be analyzed within about 1 percent the amount of K being from 0.04 to 10 mg. Data on the solubility of K, Na, Ca and NH_4 picrates in organic solvents are included.

C-308—POTASSIUM, MICRODETERMINATION OF

(C. R. Harington Biochem. J. ***35,*** *545-50, 1941)*

A method for the determination of potassium is described which is based on the precipitation of potassium dipicrylamine; the precipitate is collected, washed and dissolved in alcohol and the potassium content determined colorimetrically. *(Through C. A.)*

C-309—A NEW REAGENT FOR POTASSIUM. I. QUALITATIVE

(Clark, A. W. & C. O. Willits, Ind. & Eng. Chem., Anal. Ed. ***8,*** *209, 1936)*

Naphthol yellow S, reacts with K to form a bulky, orange-yellow precipitate. The other alkali metals and ammonium do not interfere; though sodium increases the time required four-fold. A 2 percent solution is recommended (saturated at room temperature is less than 1.5 percent). The sensitivity is about 400 p.p.m.

C-310—POTASSIUM

(U.S.P.)

Potassium compounds impart a violet color to a nonluminous flame, but the presence of small quantities of sodium masks the color. In neutral, concentrated or moderately concentrated solutions of potassium salts (depending upon the solubility and the potassium content of the salt), sodium bitartrate T.S. produces a white crystalline precipitate which is soluble in ammonia T.S., alkali hydroxides or carbonates. The formation of the precipitate, which is usually slow, is accelerated by stirring or rubbing the inside of the test tube with a glass rod. The addition of a little glacial acetic acid or alcohol also promotes the formation of the precipitate.

C-311—POTASSIUM ARSENITE, SOLUTION OF

(U.S.P.)

Add to 10 cc of solution of potassium arsenite an excess of hydrochloric acid and an equal volume of hydrogen sulfide T.S.: a yellow precipitate is produced which is soluble in ammonium carbonate T.S.

Arsenate: Acidulate 4 cc of solution of potassium arsenite with diluted nitric acid and add 1 cc of silver

nitrate T.S., and superimpose a layer of ammonia T.S. upon this liquid: no red or reddish brown color is observed at the line of contact.

Assay: Measure exactly 20 cc of solution of potassium arsenite, dilute with 75 cc of distilled water, acidify the mixture very slightly with diluted hydrochloric acid, then dissolve in the solution 2 gm of sodium bicarbonate, and titrate the resulting liquid with tenth normal iodine, using starch T.S. as the indicator. Each cc of tenth normal iodine is equivalent to 0.004946 gm of As_2O_3.

C-312—POTASSIUM CARBONATE

(*U.S.P.*)

An aqueous solution of potassium carbonate (1 in 10) responds to the tests for potassium and for carbonate.

Assay: Weigh accurately, in a stoppered weighing-bottle, about 2.5 gm of the dried potassium carbonate obtained in the test for loss on drying dissolve it in 25 cc of distilled water, and titrate with normal sulfuric acid, using methyl orange T.S. as the indicator. Each cc of normal sulfuric acid is equivalent to 0.06910 gm of K_2CO_3.

C-313—POTASSIUM CHLORATE

(*N.F.*)

When heated to about 360° C, potassium chlorate gives off oxygen and finally leaves a residue of potassium chloride, which is readily soluble in water and which responds to the tests for potassium and for chloride.

Add about 0.2 gm of potassium chlorate to 1 cc of hydrochloric acid: the liquid assumes a deep greenish yellow color, and chlorine and oxides of chlorine are evolved.

Assay: Weigh accurately about 0.1 gm of potassium chlorate, dissolve it in 10 cc of distilled water in a 250 cc flask, and add, from a burette, 35 cc of acid ferrous sulfate T.S. Prepare a valve-stopper by taking a piece of rubber tubing of convenient diameter and about 5 cm in length, a piece of glass rod in one end, and slip the other end over a glass tube which passes through a perforated stopper of a size to fit the flask used. Cut a longitudinal slit about 15 mm long in one side of the rubber tube about midway of its length. Insert the stopper in the flask and boil the mixture for 10 minutes. Cool the mixture, add 10 cc of manganese sulfate T.S., and titrate the excess of ferrous sulfate with tenth-normal potassium permanganate. Conduct a blank experiment with another portion of 35 cc of acid ferrous sulfate T.S., measured from a burette, and subtract the result of the former titration from that of the latter. Each cc of tenth-normal potassium permanganate is equivalent to 0.002043 gm of $KClO_3$.

C-314—POTASSIUM HYDROXIDE

(*U.S.P.*)

One gm of potassium hydroxide dissolves in 1 cc of water, in about 3 cc of alcohol, and in about 2.5 cc of glycerin, at 25° C. It is very soluble in boiling alcohol.

An aqueous solution of potassium hydroxide (1 in 25) responds to the tests for potassium.

Reaction: An aqueous solution of potassium hydroxide, accurately weighed, in 40 cc of recently boiled and cooled distilled water. Cool the solution to 15° C and titrate with normal sulfuric acid, using phenolphthalein T.S. as the indicator. At the discharge of the pink color of the indicator, record the volume of acid solution required, and then add 3 drops of methyl orange T.S., and continue the titration to the production of persistent pink color. Each cc of normal sulfuric acid is equivalent to 0.05610 gm of KOH. Each cc difference between the number of cc of normal sulfuric acid consumed in the methyl orange titration and the phenolphthalein titration is equivalent to 0.1382 gm of K_2CO_3.

C-315—POTASSIUM (ACID) PHTHALATE

This compound is readily recognized by its fine white crystals, although it is sometimes sold as a powder. It is soluble in both hot and cold water.

Assay: Dry the sample at 110-120°. Accurately weigh about one gram of it into a flask, add 50 cc of carbon dioxide free water. Add a few drops of phenolphthalein T.S. and titrate with 0.1 *N* sodium hydroxide. Use a blank also. Subtract the quantity of alkali used by the blank to get the same degree of coloration from the amount of alkali used in the sample. Multiply the balance by 0.02041, the conversion factor for each cc of normal sodium hydroxide, to get potassium acid phthalate.

C-316—POTASSIUM AND SODIUM TARTRATE ROCHELLE SALT

(*U.S.P.*)

When ignited, potassium and sodium tartrate emits the odor of burning sugar, leaves a residue which is alkaline to litmus paper, and effervesces with acids. To 10 cc of an aqueous solution of potassium and sodium tartrate (1 in 20) add 10 cc of acetic acid: a white, crystalline precipitate is produced within 15 minutes. An aqueous solution of potassium and sodium tartrate (1 in 10) responds to the tests for tartrate.

Assay: Weigh accurately about 2 gm of the dried potassium and sodium tartrate obtained in the determination of loss on drying, and proceed as directed under Alkali Salts of Organic Acids. Each cc of half-normal sulfuric acid is equivalent to 0.05254 gm of KOOC.CHOH.CHOH.COONa.

C-317—POWDERS, FACE. ACID-INSOLUBLE CONSTITUENTS. ALTERNATE METHOD

(*Geo. McClellan, J. Assoc. Off. Agr. Chem.* **25**, *965, 1942*)

Determination of the decomposition of acid-insoluble materials (talc, kaolin, and titanium dioxide) by a modification of the Berzelius procedure are described. The residue from the decomposition is dissolved in dilute sulfuric acid and made to a volume of 500 ml. Oxides of magnesium, aluminum, iron, and titanium are then determined on appropriate aliquots. Silica is determined on a separate sample by a rapid method.

It is quite possible to determine all these constituents on the same 2 gram sample, but in this case the acid-insoluble R_2O_3 will be contaminated with approximately 0.4 percent of the total silica. The use of sulfuric acid alone for the dehydration of the silica makes the silica determination somewhat less convenient than when a mixture of sulfuric and perchloric acids is used.

Method

To the ashed acid-insoluble materials from a 2 gram sample, add 12 grams of Na_2SO_3 and mix intimately.

(These materials should be in a platinum dish of appropriate size ready for use.) Bring to fusion in a muffle furnace, and continue to heat at 950°-1050° C for 15 minutes. Cool, and dislodge the melt into a 500 ml porcelain casserole (glass cannot be used). Wash the dish with 40 ml of HNO_3 (3 plus 1), adding the washings to the casserole. (The melt dissolves rapidly.) Add 10 grams of NH_4Cl, place the casserole under a hood, and add, slowly and with the utmost caution, 40 ml of H_2SO_4.

Cover the casserole with a watch-glass and place on a wire gauze over the moderate flame of a Meker burner. Boil until nitrous oxides have ceased to evolve, and for 15 minutes thereafter. Cool, and add 150 ml of hot water. Filter off the precipitated SiO_2 on a 12½ cm fine ashless paper. Wash with hot water, saving the filtrate. Ignite the residue to constant weight in a muffle furnace. Weigh as crude SiO_2. Moisten with H_2SO_4 (1 plus 9), add an excess of HF, and evaporate on the steam bath. When all the HF has passed off, fume off the remaining H_2SO_4 over a burner, and ignite residue to a red heat. Cool and weigh.

Weight of crude SiO_2-weight of residue from HF treatment = weight of SiO_2.

To the residue add 1 gram of $K_2S_2O_7$, and heat over a burner until a clear fusion results. Cool, and dislodge the melt into the beaker containing the filtrate from the SiO_2. Boil until the melt goes completely into solution. (Turbidity shows $BaSO_4$, which should be filtered off and weighed as such.) Make the filtrate to 500 ml and continue the analysis according to the original scheme.

This method is offered as an alternative of the one published in the report of the associate referee, not as an improvement. Some analysts may prefer the method presented here and consider it to be a more orthodox approach to the problem; others, like the writer, may find it less convenient. The results are given in the table.

TABLE 33

POWDERS	SILICA BY ORIGINAL METHOD	ALTERNATIVE METHOD
	per cent	per cent
A	45.00	45.07
	45.26	.....
B	41.80	41.69
	41.76	.....

C-318—POWDERS, RAPID ANALYSIS OF (TOILET)

*(M. Eiderman and S. Balyuk. Masloboino-Zhirovaya Prom. **16**, No. 5-6, 50-1, 1940)*

To determine talc and kaolin in powders, dry the sample to constant weight at 105° and fuse with NaOH in a silver crucible. Miscibility with the melt can be improved by wetting the powder with 0.5 percent alcoholic NaOH and drying. Extract the cooled melt with hot water, which leaves hydrated oxides of Mg, Ca, Ti and Fe undissolved while Na aluminate, silicate and zincate go into solution. Details are given for determining Al and Mg with hydroxyquinoline. A complete analysis takes only a few hours. *(Through C. A. **35**, 6392, 1941.)*

C-319—PRIMARY & SECONDARY ALCOHOLS, TEST FOR—FEARON-MITCHELL

(Merck Index)

Add 5 drops of 5 percent potassium dichromate solution to 5 cc cold 7.5 *N* HNO_3, and mix with 0.1-1 cc of the solution to be tested. A blue-violet or blue color develops in less than 5 minutes, if a primary or secondary alcohol is present. The test is negative with tertiary alcohols, aldehydes other than formaldehyde, aliphatic ketones, oxalic acid, citric acid, acids of the acetic acid series, amino acids and compounds, and phenols. It is positive with all familiar primary and secondary alcohols, saccharides, formaldehyde, and hydroxy-acids like lactic and tartaric acid. Insoluble polysaccharides like cellulose do not give the test, but starch, inulin, and dextrine give it unless the acid is dilute. If the HNO_3 is made 3.5 *N*, a 1 percent solution of glucose or maltose gives the test, but a 1 percent starch solution shows no color for hours.

C-320—PROCAINE

Qualitative Tests—Official (A.O.A.C.)

(a) Dissolve 0.1 gm of sample in about 10 ml of H_2O. Add 2 ml of 5 percent of $KMnO_4$ solution. Warm, if necessary. Reduction occurs with evolution of gas having odor of acetaldehyde (distinction from cocaine, which does not readily reduce $KMnO_4$.

(b) Dissolve about 0.005 gm of sample in 3 ml of H_2O and add a few drops of Mayer's reagent. With procaine a white precipitate is formed, which dissolves after addition of a few ml of H_2SO_4 (1 + 49). (Precipitates with stovaine and cocaine are not readily soluble in dilute H_2SO_4.)

(c) Dissolve about 0.1 gm of procaine in 2 ml of H_2O. From a burette add 25 ml of 0.1 *N* NaOH. (White precipitate formed dissolves in excess of the NaOH when heated.) Heat solution 25 minutes on steam bath. Upon cooling the solution, extracting with $CHCl_3$, and evaporating solvent, no residue should be obtained. (Stovaine does not readily hydrolyze and a residue giving an alkaloidal reaction remains upon evaporation of the $CHCl_3$.)

Quantitative Methods
Method I-Official

(Determines as procaine any p-amino-benzoic acid due to decomposition of procaine.)

Dissolve quantity of sample equivalent to about 0.1 gm of procaine hydrochloride in 5 ml of H_2O in a 50 ml beaker. Add 25 ml of 0.1 *N* NaOH and heat on steam bath 25 minutes. Cool, and transfer solution to a 500 ml glass-stoppered flask. Add 50 ml of standard bromide-bromate solution, dilute with H_2O to 250 ml add 10 ml of HCl, and stopper flask immediately to avoid loss of Br. Shake flask occasionally and allow to stand 30 minutes at room temperature, keeping the flask tightly stoppered. (It is necessary that a large excess of Br be present, as shown by a bright yellow color.) Add quickly 10 ml of 20 percent KI solution, stopper, and shake flask. Allow to stand 15 minutes, shaking occasionally. Titrate excess I with 0.1 *N* $Na_2S_2O_3$ solution, using starch indicator. Titrate to disappearance of the blue color, disregarding color that reappears on standing. One ml of 0.1 *N* bromide-bromate soln = 0.00454 gm of procaine hydrochloride, $C_{13}H_{20}O_2N_2$.HCl.

C-321—PROPYLENE GLYCOL, IDENTIFICATION OF

*(Nancy Green and M. W. Green, Bull. Natl. Form. Comm. **12**, 55, 1944)*

We followed with some modification, the procedure of

Seikel and Huntress for the ditritylation of glycols. Our procedure was as follows:

In a small Erlenmeyer flask place 3.6 gm of triphenylmethyl chloride, 0.5 gm of propylene glycol and 5 cc of pyridine and reflux on a steam bath for one hour. Cool and add 125 cc of acetone, a small quantity of activated charcoal and after mixing well filter and permit the trityl ether to crystallize. Recover the crystals, wash with a small quantity of cold acetone and recrystallize from acetone. The ditrityl ether thus formed crystallizes in needle-shaped crystals which often formed in rosettes.

If tritylation were used as an identification test for the National Formulary, it could be done easily on a somewhat smaller scale, but greater care would be necessary to assure the removal of the pyridine. Hence, it might be wise to state that the resulting compounds melt at "about 180° C."

C-322—PROPYLENE GLYCOL

(*N.F.*)

Distillation range: Propylene glycol distills completely between 185° and 195° C when determined by Method II for Boiling and Distilling Temperatures, U. S. P. XII.

Identification: To 0.5 gm of potassium bisulfate in a test tube, add 1 cc of propylene glycol and heat gently. A fruity odor is evolved and no sharp, acrid odor of acrolein is present when heated to dryness.

C-323—PSYLLIUM SEED

(*N.F.*)

Place 1 gm of Plantago Seed in a 25 cc graduated cylinder, add water to the 20 cc mark, and shake the cylinder at intervals during 24 hours; allow the seeds to settle for 12 hours and note the total volume occupied by the swollen seeds: the seeds of Plantago Psyllium occupy a volume of not less than 14 cc, those of Plantago ovata not less than 10 cc and those of Plantago arenaria not less than 8 cc.

C-324—PYROGALLOL

(*N.F.*)

An aqueous solution of pyrogallol (1 in 10) reduces solutions of the salts of silver, gold, and mercury even in the cold.

One cc of freshly prepared aqueous solution of pyrogallol (1 in 20) is colored brownish red by a few drops of ferric chloride T.S. Freshly prepared ferrous sulfate T.S. produces a blue color in an aqueous solution of pyrogallol.

C-325—DETERMINATION OF SOLUBLE PYROPHOSPHATE IN THE PRESENCE OF ORTHOPHOSPHATE

(*Victor modification of the Britske—Dragunov method*)

Reagents: Zinc sulfate—7 percent solution. Adjusted to pH 3.7 with $N/10$ H_2SO_4.

NaOH—$N/10$ solution

Procedure: An aliquot of the pyrophosphate solution containing preferably between 0.01 and 0.5 gm of P_2O_7 is placed in a 400 ml beaker and diluted to 100 ml volume. The pH is adjusted to 3.8 using a glass electrode electrometer and some means of constant agitation. The adjustment is made with $N/10$ or $N/5$ acid or with $N/10$ NaOH if the solution is acid.* Add 70 ml of the zinc sulfate reagent and agitate for 10 minutes. The liberated H_2SO_4 is titrated to pH 3.8 with $N/10$ NaOH.

1 ml $N/10$ NaOH = 0.0087 gm P_2O_7

*Pyrophosphates hydrolyze readily in acid solution, so the solution should not be allowed to remain long at or below pH 3.8 unless the zinc sulfate reagent has been added.

Determination of Free H_3PO_4

Reagents: A. Ammonium molybdate solution—Dissolve 25 gm of ammonium molybdate (PO_4 content—0.0005 percent) in water and make up 500 ml volume.

B. NH_2SO_4—Dilute approximately 27 ml of concentrated H_2SO_4 to 1 liter with water and adjust to the correct normality with standard NaOH solution.

C. Hydroquinone solution—Dissolve 2 gm of hydroquinone in 100 cc of water to which 1 cc of concentrated H_2SO_4 has been added. A moderate amount of brown color which old solutions acquire does not interfere with the determination.

D. Na_2CO_3 solution—Dissolve 50 gm of anhydrous Na_2CO_3 (PO_4 content—0.0005 percent) and 7.5 gm of anhydrous Na_2SO_3 (PO_4 content—0.0005 percent) in 250 ml of water.

E. Standard phosphate solution—Dissolve 0.3472 gm of KH_2PO_4 (recrystallized from water and dried at 85° C) in water and make up to 250 ml volume. Add a little $CHCl_3$ as a preservative. Twenty-five ml of this stock solution is diluted to 250 ml volume. L ml of this diluted stock solution = 0.1 mg of H_3PO_4.

Procedure: Weigh accurately approximately a one gram sample and dissolve in 100 ml of water. If the sample is not entirely water-soluble, it should be extracted with a suitable solvent and the water-soluble portion used. Transfer the water solution to a 250 ml volumetric flask and cool in an ice bath. Make slightly alkaline to phenolphthalein with 0.1 *N* NaOH and make up to volume. This solution should be kept cold and aliquots taken for analysis as soon as possible. An aliquot containing between 0.1 and 1.0 mg of free orthophosphate (PO_4) is transferred to a 100 ml volumetric flask in an ice bath. In a similar flask place 5 ml of the diluted standard phosphate solution and allow both flasks to come to the temperature of the ice bath. Cool reagents A and B in the ice bath also.

To each flask add 10 ml of A, 5 ml of B, and 2 ml of C. Mix well, but keep in the ice bath.

After standing in the ice bath for 10 minutes, add 25 ml of D, remove from ice bath, dilute to the mark, and mix. Compare in a colorimeter by setting the unknown solution at a height of 20 mm and balancing with the known solution. The amount of orthophosphate in the unknown is given in a table opposite the height to which the solution must be adjusted to balance the unknown held at 20 mm. Such a table may be prepared using a standard solution.

Notes: 1. The method will determine 0.1-1.0 mg of H_3PO_4 using a Dusboscq colorimeter with a 5 cm cup and a known solution containing 0.5 mg of H_3PO_4.

2. The alkaline blue color will fade, thereby necessitating the preparation of a standard with each set of determinations. Four unknown solutions are the maximum number which should be made up for one standard.

3. A red filter in the eyepiece may assist in the balancing of the two solutions.

4. All glassware used must be free of orthophosphates. A blank on the reagents using this glassware will show any contamination.

Determination of Total P_2O_5 in Organic Phosphates

Weigh accurately approximately a one gram sample into a clean glazed crucible and place in a 400 ml beaker. Add 10 ml of water, 60 ml of concentrated nitric acid, and a few glass beads. Boil down to approximately 20 ml volume and remove from heat. When cool, add 15 ml of 70 percent perchloric acid (reagent grade) and heat to fuming. The sample should be heated carefully and watched at this point. If the solution turns brown or black, it must be removed from the heat at once. When it is cool, add 15 ml of nitric acid and heat again. This procedure may have to be repeated if the solution turns brown again at the fuming temperature. If this procedure is not followed an explosion may result. When the solution remains colorless or a light straw color (the color of perchloric acid which has been heated for some time), it is cooled and diluted with water. The crucible and beads are removed and the sample made up to volume in a 250 ml flask.

The P_2O_5 content is determined on a 25 ml aliquot by the A.O.A.C. volumetric method.

C-326—PYROPHOSPHATES, TEST FOR IN THE PRESENCE OF ORTHO- AND METAPHOSPHATES

(Merck Index)

I. 4-5 drops 5 percent copper sulfate solution are added to 20 cc of the solution which is slightly alkaline to phenolphthalein, followed by dilute acetic acid carefully until the precipitate formed dissolves, then the solution inoculated with a small crystal of CuP_2O_7. Pale gray crystals of CuP_2O_7 are deposited if pyrophosphates are present.

II. Add an excess of silver nitrate solution to the neutral solution and follow with concentrated acetic acid in small portions. Ag_3PO_4 dissolves, while $Ag_2P_2O_7$ remains undissolved.

C-327—PYROPHOSPHATE, REACTION FOR—BRAUN

(Merck Index)

A concentrated aqueous solution of hexammine cobaltic chloride produces a pale reddish-yellow crystalline precipitate with moderately dilute solutions of alkali pyrophosphates.

328—PYROPHOSPHATE, TEST FOR—IN PRESENCE OF METAPHOSPHATE—KNORRE

(Merck Index)

An aqueous solution of metaphosphate is not changed in the cold by an excess of zinc acetate solution. Pyrophosphates, however, give a precipitate of zinc pyrophosphate, insoluble in acetic acid.

C-329—QUATERNARY AMMONIUM SALTS, COLORIMETRIC ASSAY OF

(M. E. Auerbach, Ind. & Eng. Chem., Anal. Ed. **16,** *739, 1944)*

In a 125-ml Squibb separatory funnel, take 50 ml of water containing 50 to 75 micrograms of the quaternary compound. Ordinary stopcock grease should be avoided. Starch-glycerol lubricant is satisfactory. Add 5 ml of 10 percent sodium carbonate solution, 1 ml of aqueous 0.04 percent bromophenol blue indicator solution, and exactly 10 ml of benzene. (The indicator solution should be prepared on the day it is to be used. Dissolve 40 mg of bromophenol blue powder in 100 ml of water containing 1 ml of 0.1 *N* sodium hydroxide.) Shake steadily for 2.5 to 3 minutes, let the layers separate roughly (20 to 30 seconds), and then swirl the funnel contents. Let stand several minutes or until well separated. Rinse a 15-ml centrifuge tube with a portion of the lower aqueous layer, discard this layer entirely and then run the colored benzene layer into the tube. Stopper the tube with a clean rubber diaphragm stopper and centrifuge for a few minutes at about 1000 r.p.m., if necessary to clarify. Transfer to a dry Klett-Summerson colorimeter tube, and read, using filter No. 60.

Limit of error is about ±2 percent, with occasional errors ±5 percent.

QUILLAJA

See Saponin C-362

C-330—QUINCE SEED

See Gums, C-189

C-331—QUININE

(N.F.)

A solution of quinine in diluted sulfuric acid shows a vivid blue fluorescence.

Add 2 or 3 drops of bromine T.S. to 5 cc of a saturated aqueous solution of quinine, and follow with 1 cc of ammonia T.S.: the liquid acquires an emerald-green color due to the formation of thalleioquin.

C-332—QUININE SULFATE

(U.S.P.)

One gm of quinine sulfate dissolves 810 cc of water, and in 120 cc of alcohol, at 25° C. One gm of it dissolves in 35 cc of water at 100° C and in about 10 cc of alcohol at 80° C. It is slightly soluble in chloroform and in ether, but is freely soluble in a mixture of 2 volumes of chloroform and 1 volume of dehydrated alcohol.

Identification: A: Acidify a saturated, aqueous solution of quinine sulfate with diluted sulfuric acid: the solution develops a vivid blue fluorescence.

B: Add 1 or 2 drops of bromine T.S. to 5 cc of an aqueous solution of quinine sulfate (1 in 1000), and follow with 1 cc of ammonia T.S.: the liquid acquires an emerald green color due to the formation of thalleioquin.

C: An aqueous solution of quinine sulfate (1 in 50) made with a few drops of hydrochloric acid, responds to the tests for sulfate.

D: A solution of quinine sulfate (1 in 50) in normal sulfuric acid is laevorotatory.

C-333—RANCIDITY—TESTS USED IN DETECTION AND DETERMINATION OF

(A. L. Caldwell and Francis E. Bibbins, J. Am. Pharm. Assoc. **23,** *9, 1934)*

The Methylene Blue Test. Twenty cc of fat are mixed with 1 or 2 cc of a 0.025 percent solution of methylene blue in absolute alcohol. The use of alcohol other than absolute will introduce the factor of water in the experiment.

The Guaiac-Hemoglobin Test. To a 10-gm sample, add 4 or 5 drops of a one or two percent solution of hemoglobin, 10 drops tincture guaiac and 10 cc of distilled water. Allow to stand a few minutes when a blue color

will be produced if oxygen has been absorbed.

Alcoholic Potassium Iodide Test. To 5 gm potassium iodide, add 10 cc distilled water and ethyl alcohol 95 percent to make 100 cc. To a 5-cc sample of the oil or melted fat add 5 cc of this alcoholic solution and shake thoroughly, allow to stand about fifteen minutes and the alcoholic layer will appear as the supernatant liquid. It is essential that the samples for comparison be previously measured out and the addition of the potassium iodide solution be then made as near simultaneously as possible. Each sample is shaken the same length of time. The amount of color furnished by the liberated iodine will serve as an index to the amount of oxygen absorbed and the samples can be arranged accordingly.

C-334—RANCIDITY TESTS—PEROXIDE METHOD

This test based on Lea's work determines the degree of rancidity by placing a sample of known weight in a mixture of chloroform and glacial acetic acid. Hydrogen peroxide is quantitatively liberated. Potassium iodide is added and the iodine liberated is titrated with standard sodium thiosulfate.

C-335—RANCIDITY—OXYGEN ABSORPTION METHOD

(Roschen and Irwin, Oil and Soap **10,** *105, 1933)*

This test is based on Wheeler's technique which is a simplification of the King, Roschen and Irwin method. The relative keeping qualities of fats are determined by this accelerated active oxygen test.

In use place 20 cc of the fat in question into each of three one inch diameter test tubes. Place one of the tubes in a constant temperature bath maintained at 98° C and bubble air through it at the rate of 2.33 cc per second. In exactly one hour, proceed with the second tube under exactly the same conditions. One hour later, start the third tube under exactly the same conditions. The tubes are inspected at regular intervals for the odor of rancidity. The moment the first tube smells rancid, all three tubes are removed from the bath and a peroxide determination is made as given in C-334.

Many samples are organoleptically rancid when the peroxide content is 20 or more milli equivalents per 1000 grams of sample. According to Vibrans, (Oil and Soap, **18,** 109, 1941) available data indicates that lard becomes organoleptically rancid at 20, hydrogenated cotton seed oil at 75, hydrogenated cotton seed oil compound at 100 and cotton seed salad oil at 125 milli equivalents per kilogram.

C-336—REDUCING COMPOUNDS—QUALITATIVE DETECTION OF, WITH THE AID OF SPOT TESTS

(F. Feigl & G. F. Dacorso, Chemist Analyst, **32,** *No. 2, 28, 1943)*

This test detects sodium sulfite, thiourea, ferrous ions, and others. There is no differentiation between the compounds found. Only the presence of reducing agents is established.

REAGENT. This is an approximately 5 percent solution of phosphomolybdic acid in water or alcohol. The acid of commerce, or one that has been stored for some time, is frequently partially decomposed; then, in consequence of separation of MoO_3, it is not completely soluble. In such cases weigh out a larger amount and filter the solution. The reagent is stable when stored in dark bottles that are kept stoppered.

PROCEDURE. Place one drop of the solution (or several granules, 0.5-1 mg, of the solid substance) in one of the cavities of a spot plate and add a drop of the reagent solution. In the case of difficultly soluble compounds a drop of dilute sulfuric acid can be added, if necessary. In the presence of reducing compounds there is formed, in proportion to their amount, a blue or green coloration. A blank test is required only when very small amounts of the reducing substance are present. A more sensitive form of the test consists in carrying it out in a micro-crucible with gentle heating.

Also filter paper can be impregnated with an alcoholic solution of phosphomolybdic acid and allowed to dry in the air. When a drop of the solution to be tested is placed on the yellow paper, there is formed a blue or green fleck if reducing compounds are present. Paper impregnated with phosphomolybdic acid must be preserved with exclusion of light, otherwise it changes to a green color in consequence of the reducing action of the cellulose of the paper.

A survey of the sensitiveness of the test for reducing compounds with phosphomolybdic acid is given in the table below. In one drop (0.05 ml) there can be detected:

Mercaptobenzothiazole	6	γ (gamma)
Thionalide	12	"
Benzidine hydrochloride	1	"
Benzidine	1	"
Sodium sulfite	12	"
Potassium iodide	6	"
Ferrous ions	2½	"
Thiourea	2½	"

(Chapter IV continues in subsequent issue.)

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